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Vol. 41, No. 1
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ANIMAL REMAINS FROM THE DURST ROCKSHELTER, SAUK COUNTY, WISCONSIN, Paul W. Parmalee 11

THE COLLECTOR'S CORNER 18

A ROSTER OF LAPHAM MEDALISTS 19

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Milwaukee, Wisconsin

Incorporated, 1906

For the purpose of advancing the study and preservation of Wisconsin Indian Antiquities.

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WISCONSIN ARCHEOLOGICAL SOCIETY

In 1901 the archeological section of the Wisconsin Natural History Society began the publication of the Wisconsin Archeologist. Within two years the section broke away and formed the Wisconsin Archeological Society, which has continued the publication of this important archive of the State's archeology.

For nearly sixty years the publication has contained descriptive information on mounds, artifacts, and sites by professional archeologists and by amateurs.

In 1911 the Wisconsin Archeological Society received a State appropriation for the purpose of conducting archeological surveys and research which has continued to date.

The general objective of the Society is to advance the study and preservation of Wisconsin Indian antiquities. Monthly meetings are held from September to June, with a speaker on some archeological or ethnological subject. The official publication is the Wisconsin Archeologist published quarterly containing articles of local interest and of the surrounding area, as archeology knows no boundary. Members have participated in field work under the direction of professional archeologists and as individuals in the mapping of mound sites and the location of new sites.

One of the most important functions of the Society is to preserve the Indian antiquities of the State and particularly to discourage unorganized digging into prehistoric sites through which important scientific information would be lost. The Society, as a member of the State Archeological Survey, also cooperates with the State Conservation Department in setting aside and preparing important sites for the public benefit as State Parks.

Amateur and professional archeologists making outstanding contributions are honored

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The membership is composed of people of all ages and from all walks of life, and, at present, numbers 452. They need to have only one thing in common -- an interest in the Science of Archeology.

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For your convenience, the members are also segregated by States and Cities.

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Alberts, Robert C., 4775 Sheridan Dr., Williamsville, N. Y.
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Augustine, Mrs. Shirley, Lime Springs, Iowa

Baerreis, Dr. David, U. of Wis. Dept. of Anthropology, Madison, Wis.
Bailey, Marvin, 1312 Pocohantas Drive, Madison, Wis.
Barnett, Milton, U. of Wis. Sterling Hall, Madison, Wis.
Barrett, Dr. S. A. (L), 306 Spain St., Sonoma, California

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Bastian, Tyler, 535 Walnut Street, Ann Arbor, Michigan
Bauman, Dr. O. H., Waubeno, Wis.
Bauman, William, 131 W. Adams, Pittsfield, Ill.
Beaubien, Paul, 3127 Chicago St. #127, Omaha, Nebraska
Becker, Bob, Box 206, Fish Creek, Wis.
Been, Parnel (L), Route 1, Grantsburg, Wis.
Beerntsen, C., 2061 Blake Ave., Racine, Wis.
Bell, Jack M., 330 N. Carroll St., Madison, Wis.
Bindrich, James, 2929 N. 45th St., Milwaukee, Wis.
Black, Robert F., U. of Wis. Dept. of Geology, Madison, Wis.
Blake, Bradley, 1317 Jersey St., Stevens Point, Wis.
Blohm, R. A., 376 S. 4th St., Orem, Utah
Bookwalter, H. S., Clarksburg, Ohio
Borhegyi, Dr. Stephen F., 2515 N. Terrace Ave., Milwaukee, Wis.
Boyd, C. H., P. O. Box 273, Minocqua, Wis.
Bradbury, Mrs. Julian, 3925 Hammersley Ave., Madison, Wis.
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Cooke, Mrs. Henry Jr., Helm Road, Dundee, Illinois
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Copeland, Dr. S. G., 1054 Lilley Ave., Columbus, Ohio
Cornell, Herbert W., 4117 N. 15th St., Milwaukee, Wis.
Cortez, Carlos, 1807 Manitowoc Ave., South Milwaukee, Wis.
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Cunningham, W. J., 120 Pipestone St., Benton Harbor, Michigan
Curkeet, William Jr., 119 E. Washington Ave., Madison, Wis.

Dallman, John E., 837 Burbank Place, Madison, Wis.
Damereau, Henry (L), Brandon, Wis.
Daring, Wilson V., Route 5, Napolean, Ohio
Davenport, Robert, 5707 - 13th Ave., Kenosha, Wis.
Davis, Leo Paul, 905 N. Joliet St., Wilmington, Ill.
Deich, Eugene M., Route 2, Cambria, Wis.
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Dickey, P. G., 6745 Ash Place, Gary, Indiana
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Dillon, Joe, Christopher, Illinois
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Eichenberger, Ed., Route 2, Box 258, Muskego, Wis.
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Lehmann, Dr. F. W., 65 S. Main St., Hartford, Wis.
Leipold, Arthur, 1106 Indiana St., Racine, Wis.
Lellep, O. G., 508 N. 115 St., Wauwatosa, Wis.
Lemke, Kenneth P., 216 S. George St., Mt. Prospect, Illinois
Lemmon, Loren, Pellyton, Kentucky
LeTellier, Zeno, 1292 N. 63rd St., Wauwatosa, Wis.
Lewis, Don E., Route 3, Box 78, Flora, Illinois
Lewis, Dr. T. M. N., U. of Tennessee, Dept. of Anthropology, Knoxville, Tenn.
Lilly, Eli (L), 5807 Sunset Lane, Indianapolis, Ind.
Lind, Allan, 1213 Michigan Ave., Evanston, Illinois
Longacre, Bill, 213 Blanche St., Houghton, Michigan
Loomis, Mary, 2712 N. 37th St., Milwaukee, Wis.
Luebke, Earl, Route 1, Iron Ridge, Wis.
Lurie, Nancy O., 3300 East Delhi Road, Ann Arbor, Michigan
Luther, Elmer C., 1754 S. 62nd St., West Allis, Wis.
Luther, Dr. Tom, 510 W. College, Appleton, Wis.

Mack, David J., 1210 Bowdoin Road, Madison, Wis.
Maher, John R., 663 South Wilder, St. Paul, Minnesota
Maher, Robert, U. of Western Michigan, Dept. of Sociology, Kalamazoo, Michigan
Maloof, Dr. George, 19 N. Pinckney St., Madison, Wis.
Mason, Ronald J., 129 S. Jefferson, Green Bay, Wis.
Maurer, Tony J., 1823 N. 4th St., Sheboygan, Wis.
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Menten, Joseph M., 1025 N. 18th St., Manitowoc, Wis.
Menten, J. Robert (L), 860 N. 5th St., Manitowoc, Wis.
Merbs, Charles, 416 Appleton, Menasha, Wis.
Mershdorf, Peter E., Box 486, Wabeno, Wis.
Mertz, Henrietta, 5425 East View Park, Chicago, Illinois
Messmann, Diane, 1203 Milwaukee St., Kewaunee, Wis.
Meyer, Heinz E., Koror, W. Caroline Islands of the Pacific
Meyer, Jack C., 10 Meyer Drive, Rhinelander, Wis.
Mier, August J. 739 Cleveland Ave., Batavia, Illinois
Miglautsch, Mrs. Doris, U. of Wis. Barnard Hall, Madison, Wis.
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Morse, Dan Dr., Box 60, Peoria, Illinois
Muckenhirn, Dr. Robert, U. of Wis. Dept. of Soils, Madison, Wis.
Munger, Lynn, Angola, Indiana
Murdock, Dr. H. D., 1244 S. Cewasso, Tulsa, Oklahoma
Murphy, Kevin, 2900 Gabriel Ave., Zion, Illinois

Naugle, Louis, Route 1, Elkhart, Illinois
Nelson, Lewis F., 5433 N. Andrews Ave., Ft. Lauderdale, Florida
Nero, Robert, Saskatchewan Museum of Natural History, Regina, Saskatchewan, Can.
Nessler, Robert P., 180 E. Delaware Place, Chicago, Illinois
Nevitt, George P. (L), P. O. Box 469, Oshkosh, Wis.

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Noble, W. O., Route 1, Box 680, Burlington, Wis.
Nolde, Arthur, 2511 N. 84th St., Wauwatosa, Wis.
Norman, E. H., 119 E. Mission Road, Green Bay, Wis.
Nussbaum, Ben, Fairbury, Illinois

Oehmig, Walter, 447 Lenox St., Oak Park, Illinois
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Owen, Ralph, 28 Newton St., Eau Claire, Wis.

Palmer, Charles J., Star Route, Spooner, Wis.
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Panzer, Frank (H), Route, Oakfield, Wis.
Parsons, Lee A., Public Museum, Milwaukee, Wis.
Perino, Gregory, 4303 W. Edison, Tulsa, Oklahoma
Perkins, Raymond, Route 2, Toulon, Illinois
Persha, Steve, Route 1, Box 14, Mayville, Wis.
Petersen, Edward B., Black Point Road, Lake Geneva, Wis.
Petrie, E. K., Route 3, Box 106, Burlington, Wis.
Pierron, Louis, 7231 N. Pierron Road, Milwaukee, Wis.
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Powell, John T., Crystal Lake, Land O' Lakes, Wis.
Prill, Allen, 7206 W. Center, Milwaukee, Wis.
Prill, William, 1922 N. 122nd St., Wauwatosa, Wis.
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Rexin, Elmer E., 3934 N. Sherman Blvd., Milwaukee, Wis.
Richmond, Lawrence, 144 Forrer Blvd., Dayton, Ohio
Richter, Arnold, Fairmount, Vermillian Co., Illinois
Richter, Milo C., 1566 Martha Washington Drive, Wauwatosa, Wis.
Rilling, Gerald, 720 Colonial Drive, Rockford, Illinois
Ringeisen, Joseph Jr., 1804 N. 3rd St., Milwaukee, Wis.
Rittenhouse, Eugene, 417 E. Washington, Rushville, Illinois
Ritzenthaler, Dr. Robert, Milwaukee Public Museum Dept. of Anthropology, Milwaukee, Wis.
Roeder, Andrew J., Route 2, Waupun, Wis.
Ross, Martin N., Cambria, Wis.
Roth, Clifford, 314 Center St., Gridley, Ill.
Rowe, Dr. Chandler W., 1015 E. Jardin St., Appleton, Wis.
Ruzicki, Stanley, 9717 - 29th Ave., Kenosha, Wis.

Salchert, Patricia, 9403 W. Center St., Milwaukee, Wis.
Salisbury, Dr. Rachel (L), Milton Junction, Wis.
Salzer, Robert J., 2009 Simpson St., Madison, Wis.
Sander, Phil, 8026 - 7th Avenue, Kenosha, Wis.
Sauer, Jonathan D., 1121 Amherst Drive, Madison, Wis.
Schlegel, Mrs. Charles, 608 Pennsylvania Ave., West Bend, Wis.
Schlegel, Philip (L), 519 Kilbourn Ave., West Bend, Wis.
Schneider, Dr. C. J., 610 Sawyer St., Waupun, Wis.
Schoewe, Charles G., Route 1, Box 103, Nashotah, Wis.
Scholz, Paul (L), 6510 W. Forest Home Ave., Milwaukee, Wis.

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Schorger, Dr. A. W., University Heights, Madison, Wis.
Schug, Ernest (L), Route 1, Box 62, Delafield, Wis.
Schultz, Dr. Arnold, 3032 Washington Blvd., Chicago, Illinois
Schumm, MacDonald, 146 W. Union St., Circleville, Ohio
Schupp, Phillip C., 2418 Foster Ave., Chicago, Illinois
Schwartz, B. A., Elkhart Lake, Wis.
Scott, Walter E., 1721 Hickory Drive, Madison, Wis.
Seering, Gary, Box 105, Beaver Dam, Wis.
Sellers, Mary, Cornell University, Dept. of Anthropology, Ithaca, New York
Silverberg, James, 3000 N. Maryland, Milwaukee, Wis.
Slowey, Auralie P., Paulson Drive, Burlington, Mass.
Smith, Alfred K., 1635 N. 47th St., Milwaukee, Wis.
Smith, Arthur G., 65 N. Foster St., Norwalk, Ohio
Smith, Lawrence L., 53 W. Jackson Blvd., Chicago, Illinois
Smith, Lincoln B., P. O. Box, Big Bend, Wis.
Snyder, Robert, 5418 W. Garfield, Milwaukee, Wis.
Soday, Frank J., 5301 Caroline, Western Springs, Illinois
Sohrweide, Dr. Anton (L), 512 Paramount Theatre Bldg., Syracuse, New York
Sohrweide, Richard, 319 N. 69th St., Wauwatosa, Wis.
Sommers, Donald, 5936 - 3rd Ave., Kenosha, Wis.
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Stoltenow, W. D., Box 205, Route F, Tieton, Washington
Stout, A. B. (L), Pleasantville, New York
Strohm, Edward J., 9052 S. Pleasant Ave., Chicago, Illinois
Struever, Stuart, 1121 Leonard Place, Evanston, Illinois
Stucki, Rev. Ben, Neillsville, Wis.
Supernaw, Dr. J. S., 304 Tenney Bldg., Madison, Wis.
Swanson, Clifford D., 401 Green Avenue, Stevens Point, Wis.
Swartz, Patricia C., Route 3, Box 5, Egofske Rd., Waukesha, Wis.
Sylvester, Arthur E., 2414 N. 41st St., Milwaukee, Wis.
Szcygiel, Edward, 1119 E. Burleigh, Milwaukee, Wis.

Tallmadge, Edward S., Pine Lake, Hartland, Wis.
Thackeray, Roy D., Green St., Melvin, Illinois
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Throop, Dan A., 223 E. Broadway, E. St. Louis, Illinois
Titterington, Dr. P. F., 212 Metropolitan Bldg., St. Louis, Mo.
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Turney, Paul A., 2243 S. Woodward St., Milwaukee, Wis.
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Tyrrell, Lyal L., 2815 Harmony Circle, Route 5, Waukesha, Wis.

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Utz, Marguerite L., Route 2, Attica, Ohio

Vanerka, Charles J., 8125 S. Wolf Road, LaGrange Park, Illinois
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Vieau, Violet, Hatfield, Merrillan, Wis.
Villers, George J., C/O Ann Arbor R. R., Kewaunee, Wis.
Vogel, Robert, Wadsworth Road, Wadsworth, Illinois

Wagner, Richard K., 328 Woodstock Ave., Glen Ellyn, Illinois
Wallner, Victor, C/O C. & N. W. R. R. Depot, Niagra, Wis.
Ware, Gordon, 148 Warren Court, Green Bay, Wis.
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Weber, John J., 121 King St., Dunkirk, N. Y.
Weeks, Robert F., Route 2, Box 33, Fond du Lac, Wis.
Weiskopf, Mrs. Peter, 4547 N. 30th St., Milwaukee, Wis.
Wells, Edward W., Forestville, Wis.
Wentling, Murray E., 334 W. Morgan St., Dixon, Illinois
Westre, S. W., Sauk City, Wis.
Whaley, J. K., 6340 N. Lake Drive, Milwaukee, Wis.
Whelan, Lex., 526 E. Linus St., Milwaukee, Wis.
White, Miss Pat, 1628 W. Wisconsin Ave., Milwaukee, Wis.
Whiteford, Dr. Andrew, Logan Museum, Beloit, Wis.
Wiedemann, Mrs. Jean, 2232 S. W. Troy, Portland, Oregon
Wiegand, Phillip H., 1276 N. 63rd Court, Wauwatosa, Wis.
Wiegand, Mrs. Phillip H., 1276 N. 63rd Court, Wauwatosa, Wis.
Wiersum, Wayne, Route 3, Box 196, Kenosha, Wis.
Wieseman, T. R. (L), 3143 S. 31st St., Milwaukee, Wis.
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Wilson, Gerald A., 702 Cranston Road, Beloit, Wis.
Wilson, Jack, 207 Prairie St., Knoxville, Ill.
Winterhalter, Louis O., 2112 Bristol, Westchester, Illinois
Wittry, Dr. Warren (L), Illinois State Museum, Springfield, Illinois
Wood, Kenneth, 1945 South 58th St., West Allis 19, Wis.
Wright, James V., U. of Wis. Sterling Hall, Madison, Wis.

Yager, Richard S., 1114 Old Elm Lane, Glencoe, Illinois
Young, Stephen W., Route 3, Box 347, Antioch, Illinois

Zander, Herman O., 849 N. 10th St., Milwaukee, Wis.
Zellner, Earl J., 2430 N. 57th St., Milwaukee, Wis.
Zilisch, Herbert, 2053 S. 58th St., Milwaukee, Wis.
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Hanson, George E., Route 1, Grantsburg, Wis.
Harrington, C. L., 136 Lathrop St., Madison, Wis.
Hart, Evan A., 1902 N. 49th St., Milwaukee, Wis.
Hart, Mrs. Evan, 1902 N. 49th St., Milwaukee, Wis.
Hauska, Robert, 933 Water St., Marinette, Wis.
Heidemann, Richard P., 91 Craig Ave., Madison, Wis.
Helm, Ernest, 1214 Tenth St., Lawrenceville, Illinois
Hempel, Harold C. (L), Fall River, Wis.
Henderson, M. J., 316 W. Sheridan, Fremont, Michigan
Henn, Merrill B., 5102 - 21st Ave., Kenosha, Wis.
Henning, Walter, 4572 N. 28th St., Milwaukee, Wis.
Herrick, Dr. Ruth, 26 Sheldon Ave., S. E., Grand Rapids, Michigan
Hiltman, Arthur W., 2235 S. 58th St., West Allis, Wis.
Hohenstein, Henry, Box 134, Jefferson, Wis.
Horn, Merlin, 930 Rush Drive, Fayetteville, Arkansas
Howard, L. W., 11950 Walnut St., Pinckneyville, Illinois
Howard, Robert, 2615 N. Frederick Ave., Milwaukee, Wis.
Howard, William, 1024 - 15th St., Rock Island, Illinois
Howell, L. W., Glenwood, Arkansas
Hoyt, Kenneth, 3922 N. 6th St., Milwaukee, Wis.
Hughes, Dr. Paul L., 737 W. Belden Ave., Chicago, Illinois
Hunt, Richard A., 56 - B Birchcrest Rd., Horicon, Wis.
Hunt, Ben W., 11221 W. Janesville Rd., Hales Corners, Wis.
Huscher, Harold, 1517 "O" Street, Lincoln, Nebraska

Inversetti, W. F., 202 Monee Road Park, Forest, Illinois
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Janecek, Robert E., 738 S. 108th St., Milwaukee, Wis.
Jensen, Edwin C., 4800 Winnequah Road, Madison, Wis.
Jensen, Wilbur, Route 2, Box 21, Oconto, Wis.
Jerrard, L. P., 522 Willow Road, Winnetka, Illinois
Johnson, Cecil, 3327 S. 83rd St., Milwaukee, Wis.
Johnson, Norman L., 2021 Dewey St., Whitehall, Wis.
Jones, Robert R. (L), Route 1, Box 90, Wild Rose, Wis.

Kaczmarek, James, 645 Pine St., Burlington, Wis.
Kaltenbach, C. D., Potosi, Wis.
Kannenberg, L., Putnam, Illinois
Kenyon, Henry A., 1100 Williams St., Williams Bay, Wis.
Keslin, Richard O., Logan Museum, Beloit, Wis.
Kieckhefer, Robert (L), Brookfield, Wis.
Klein, Frank, 8330 Stickney Ave., Wauwatosa, Wis.
Koeppler, Paul, 5284 N. 83rd St., Milwaukee, Wis.
Kohler, Herbert V. (L), Kohler, Wis.
Kohler, Walter (H), Kohler, Wis.
Kouba, T. F., 1962 N. Prospect Ave., Milwaukee, Wis.
Kracht, Lawrence, 2814 N. 48th St., Milwaukee, Wis.
Kuhm, Dr. H. W., 4729 W. North Ave., Milwaukee, Wis.

LaFave, Reuben, Oconto, Wisconsin
Langer, Irwin A., 2800 N. Emery Ave., Milwaukee, Wis.
Larson, Peter L., 3345 N. Troy, Chicago, Ill.
Latham, Roy, Route 1, Orient, Long Island, N. Y.
Lauer, Norbert, 704 Broad St., Menasha, Wis.
Laughlin, W. S., U. of Wis. Dept. of Anthropology, Madison, Wis.
Lee, Gerhard B., 718 Gannon Ave., Madison, Wis.

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MILWAUKEE, WISCONSIN, MARCH, 1960

ANIMAL REMAINS FROM THE AZTALAN SITE, JEFFERSON COUNTY, WISCONSIN

Paul W. Parmalee

Illinois State Museum, Springfield

Introduction

Situated along the west bank of the Crawfish River, the Aztalan Site is located approximately five miles northwest of Jefferson, Jefferson County, and is the largest Middle Mississippi Site in Wisconsin. Formerly, the Crawfish River was considerably deeper than at present, the minimum depth at Aztalan probably being about four feet in low stages. One and a half miles north of the site there is a rapid which becomes quite shallow during the lowest water stages; such a combination provided an excellent source of fresh-water mussels and fish which were used extensively by these Indians. Heavy stands of timber to the east of the river and semi-open prairie areas to the west constituted ideal habitat conditions for a variety of game species, as did the extensive marsh areas in the drainage basin of the Rock River and its tributaries.

Archeological excavations at the Aztalan Site have, through the recovery of large quantities of refuse material such as shell, bone, worked stone and flint, copper and pottery, provided significant data concerning the mode of life of these people and their cultural affiliations with other groups.

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nical data for restoration of the two platform mounds and the stockade (Baerreis, et. al., 1958).

A relatively large quantity of bone and shell was found in the midden debris and in refuse pits during the excavations at Aztalan, but, except for the artifacts, little detailed attention has been given to this faunal material. Barrett (1933) lists some of the species of mollusks encountered at Aztalan (identified by T. E. B. Pope), as well as descriptions and illustrations of numerous shell artifacts. Except for a rather detailed presentation of evidence pointing to the general practice of cannibalism by these people, no analysis of the bone recovered by Dr. Barrett during his excavations is given. In the appendix section, Barrett (op. cit.) has included "Excerpts from a lecture by A. N. Somers" in which Somers records a few of the vertebrate species indentified as (or thought to be?) those animals ". . . that represent a large part of their [the Indian's] food supply."

Acknowledgments: I am greatly indebted to Dr. David A. Baerreis, Chairman, Department of Anthropolgy, University of Wisconsin, Madison, for the opportunity to borrow the faunal material recovered at Aztalan in 1949 and 1950. Dr. Robert Ritzenthaler, Curator of Anthropology, Milwaukee Public Museum, kindly permitting me to examine the bone and shell recovered by Dr. Barrett, now stored at the Milwaukee Public Museum. A list of fresh-water mussels taken from a storage pit on the southwest pyramid (identified by Dr. Robert Chew) was generously supplied by Dr. Chandler W. Rowe, Head, Department of Anthropology, Lawrence College (see Table I.).

Accounts of Species

(Mollusks)

Fresh-water Mussels. — At least 21 species of mussels were identified from the three samples (Table I), totaling almost 2,000 specimens. **Elliptio dilatatus** was the most numerous mussel encountered, constituting approximately 48 percent of the total number of identified shells. The common fat mucket, **Lampsilis siliquoidea**, comprised 24 per cent of the total while

the third most common species was the three-ridge, **Amblema costata** (considered by Baker, 1928, as **A. rariplicata**). Of the 146 specimens of the three-ridge, a relatively heavy shell, from the University of Wisconsin collection, 96 (65%) were drilled for use as hoes.

Most species of mussels encountered at Aztalan were probably common in the Crawfish River and easily obtainable, at least during the warm months. Only a very few valves were used in the manufacture of ornaments or utensils (Barrett, 1933: Pl. 68), so it is apparent that their principal value was as a food.

TABLE I

The Species and Number of Identified Remains of Mollusks Recovered at the Aztalan Site, Jefferson County, Wisconsin.

Species	Total No. of Remains		
FRESH-WATER MUSSELS:	Univ. Wis.	Mil. Pub. Mus.	Law.-rence College
Elliptio dilatatus, Spike	309	66	564
Amblema costata, Three-ridge	35	146	6
Lampsilis siliquoidea, Fat Mucket	29	16	432
Actinonaias carinata, Mucket	19	13	
Fusconaia flava, Wabash Pig-toe	15	3	119
Lasmigona costata, Fluted Shell	12		27
Lampsilis ventricosa, Pocketbook	11	7	2
Pleurobema cordatum, Small Niggerhead	9	6	2
Lasmigona complanata, White Heel-splitter	3	2	1
Ligumia recta, Black Sand-shell	3	4	
Dysnomia Triquetra	2		
Quadrula nodulata, Warty-back	2		
Alasmidonta caleolus, Slipper-shell	1		
Alasmidonta marginata, Elk-toe	1		2
Strophitus rugosus, Squaw Foot	1	5	38
Proptera alata, Pink Heel-splitter?	1		
Anodonta sp., Floater	1	2	11
Megalonaias gigantea, Washboard		7	
Actinonaias ellipsiformis, Ellipse		6	26
Quadrula pustulosa, Pimple-back		4	2
Truncilla sp.			2

Snails. — The paucity of local gastropods in the refuse at Aztalan indicates little, or no, utilization of these mollusks by the Indian. Specimens of **Campeloma intergrum** (6), **Mesodon thyroidus** (6), and **Pleurocera** cf. **acuta** (1) were noted in the Barrett collection while the 1949-1950 faunal collections at the University of Wisconsin contained the following: **Anguispira**

alternata (25), **Triodopsis multilineata** (2), **Lymnea** sp. (1). The natural occurrence of some shells of terrestrial species (**Anguispira, Mesodon, Triodopsis**) is to be expected in the midden deposits, while the few aquatic specimens could have been collected incidentally with the mussels or deposited by the river during periods of high water.

Marine Mollusks. — The presence of marine shells in midden debris and with burials in midwest sites is usually indicative of established trade routes to the coastal regions and/or bartering with other groups. Compared with the vast quantity and variety of marine species recovered at the Cahokia Site in Illinois (Parmalee, 1958a), a site (culture) to which Aztalan was probably most closely affiliated, the amount of marine shell found at Aztalan is small. Possibly this limited amount of marine material was obtained through trade with more southern groups (Cahokia?) and/or was carried from the Indians' prior location to their new one in Wisconsin.

Barrett (1933) discusses the shell ornaments found with burials, indicating that the Knobbed Whelk, **Busycon carica,** was the species most commonly used in the manufacture of beads and ornaments. Several shoulder and axis sections of **Busycon** were recovered, and the over 1,900 flat disc shell beads found with the "Princess" burial (typical of the many thousands of disc beads from Cahokia burials), were cut probably from specimens of marine whelks. Perforated pendants made from the axis of **Busycon** were also encountered, and only two specimens, apparently used as beads, of the Lettered Olive, **Oliva litterata** (now **O. sayana**) were found. A single specimen (bead) of the Common Atlantic Marginella, **Prunum apicunum**, was also noted in the Barrett collection.

(Vertebrates)

Fishes. — The quantity of bones at the Aztalan Site attest to the extensive use of fish by the Indians once occupying this site (Table II). Several mandibles of catfish (**Ictalurus** cf. **lacustris**) were from very large specimens, and numerous bones of buffalofish also represented big individuals. Compared with fish (skeletons) of known weight, at least three of the northern pike specimens would have weighed a minimum of 10-12

pounds. The species composition and size of the fish used by the inhabitants of Aztalan suggest a moderately large, clear and fairly deep river as a source of supply — the Crawfish River, and possibly the Rock River?

TABLE II

The Species and Number of Identified Remains of Vertebrates Recovered at the Aztalan Site, Jefferson County, Wisconsin.

Species	Total Number of Remains	
VERTEBRATES:	Univ. Wisc.	Mil. Pub. Mus.
Fishes:		
Catfish, probably Channel Catfish, **Ictalurus lacustris**	23	108
Bass, **Micropterus** sp.	23	19
Suckers and Buffalofish, Catostomidae	13	19
Bass, Crappie, Sunfish group, Centrarchidae	11	
Redhorse, **Moxostoma** sp.	10	8
Bullhead, **Ictalurus** sp.	5	19
Walleye and/or Sauger, **Stizostedion** sp.	4	2
Northern Pike, **Esox lucius**	3	16
Fresh-water Drum, **Aplodinotus grunniens**	3	25
Gar, **Lepisosteus** sp.		63
Smallmouth and/or Black Buffalofish, **Ictiobus** sp.		16
Buffalofish, **Ictiobus** sp.		24
Sucker, **Catostomus** sp.		12
Largemouth Buffalofish, **Ictiobus cyprinellus**		8
Bowfin, **Amia calva**		2
Turtles:		
Emys, Chrysemys, Graptemys group	14	14
Blanding's Turtle, **Emys blandingii**	13	30
Painted Turtle, **Chrysemys picta**	8	
Snapping Turtle, **Chelydra serpentina**	8	37
Turtle Spp.	7	
Soft-shelled Turtle, **Trionyx** sp.	1	1
Map Turtle, **Graptemys geographica**		2
Birds:		
Passenger Pigeon, **Ectopistes migatorius**	108	21
Lesser Scaup, **Aythya affinis**, and/or Ring-necked Duck, **Aythya collaris**	102	41
Duck spp.	54	12
American Coot, **Fulica americana**	25	8
Blue-winged Teal, **Anas discors**, and/or Green-winged Teal, **Anas carolinensis**	16	3
Redhead, **Aythya americana**	9	3
Turkey, **Meleagris gallopavo**	6	
Blue and/or Snow Goose, **Chen** sp.	5	2
Canada Goose, **Branta canadensis**	4	8
Trumpeter Swan, **Olor buccinator**	4	3
Hooded Merganser, **Lophodytes cullatus**	3	1
Bufflehead, **Bucephala albeola**	3	1
Common Loon, **Gavia immer**	3	
Swan, **Olor** sp.	2	2
Canvasback, **Aythya valisineria**	2	
Blackbird spp.?, Icteridae	2	

Double-crested Cormorant, **Phalacrocorax auritus**	2	
Sharp-tailed Grouse, **Pedioecetes phasianellus**	2	2
Sandhill Crane, **Grus canadensis**	1(?)	6
Red-tailed Hawk, **Buteo jamaicensis**	1	
Goshawk, **Accipiter gentilis**	1	
Mallard, **Anas platyrhynchos**		5
Canada Goose?, **Branta canadensis**		3
Pied-billed Grebe, **Podilymbus podiceps**		2
Lesser Yellowlegs, **Totanus flavipes**		2
Wood Duck, **Aix sponsa**		2
Horned Grebe, **Colymbus Auritus**		1
Merganser, **Mergus** sp.		1
Mammals:		
Whitetail Deer, **Odocoileus virginianus**	644	914
Canid, probably Domestic Dog, **Canis familiaris**	35*	12**
Elk, **Cervus canadensis**	25	21
Raccoon, **Procyon lotor**	18	22
Beaver, **Castor canadensis**	17	13
Muskrat, **Ondatra zibethica**	9	13
Thirteen-lined Ground Squirrel, **Citellus tridecemlineatus**	4	
Cottontail, **Sylvilagus floridanus**	1	
Mink, **Mustela vison**	1	
Red Fox, **Vulpes fulva**	1	6
River Otter?, **Lutra canadensis**	1	
Woodchuck?, **Marmota monax**	1	
Black Bear, **Ursus americanus**		3
Badger, **Taxidea taxus**		1
Fisher, **Martes pennanti**		1

* A partial burial not included.
** Three, relatively complete burials not included.

The single species utilized in the largest numbers was the catfish (probably channel catfish), the remains comprising 30 percent of the total number of identified fish bones. As a group, the catostomids (buffalofish and suckers) were second in importance, their remains accounting for 25 percent of the total. Sixty of the 63 gar remains were scales, probably all from the same individual, so that actually the Indian's use of this rough fish was very limited. At least 12 species of fish are represented in the faunal samples from Aztalan and, although the catostomids and catfish were taken in the largest numbers (probably in direct proportion to the existing population), several of the native "game" fish such as walleye, northern pike and bass were also caught.

Turtles. — Apparently little use was made of turtles, as evidenced by the paucity of remains. Although five species, are represented, less than 150 bones were recovered. Of the 30 shell remains of **Emys blandingii** from the Barrett collection,

26 were carapace sections of one individual; as evidenced by the scrape marks and smoothed interior, this carapace had been used as a bowl or dish by the Indian. The relatively complete sections of carapace and plastron of the map turtle from this collection are also of interest. These specimens had been found in refuse pit 23 with the skull and antlers of a large deer (Barrett, 1933: p. 22; Plate 23, fig. 2); an oblong hole had been drilled (or broken) at the left-center position in the carapace, but otherwise the shell had not been worked and its function is a matter of speculation. Probably the larger snapping turtle, as well as most turtle specimens caught, were used for food.

Birds. — The inhabitants of Aztalan utilized a rather large variety of birds (Table II), and the predominance of certain species and groups makes the study of these avian remains of special interest. As a group, waterfowl (ducks, geese, swans) were taken in the largest numbers and their remains comprised 60 percent of the total. Of the 225 waterfowl bones identified at least to the genus level, approximately 74 percent were those of diving (or "river") ducks (e. g., lesser scaup and/or ring-necked duck). Considering the extensive marsh and backwater areas within close proximity to the site, it is surprising that more "puddle" ducks such as mallard and teal were not taken.

Although the bird was not an uncommon migrant in Wisconsin during early times, the few trumpeter swan bones at this site are a noteworthy record. Remains of this species were encountered in large numbers at Cahokia (Parmalee, 1958b), but this site was situated along the major flyway route (Mississippi River) while Aztalan was apparently too far east to receive the huge flights of migrating swans and certain other species of waterfowl.

Once an extremely common migrant and nesting bird in Wisconsin, the passenger pigeon is now extinct. This pigeon was used by Indians in several regions throughout eastern North America (Swanton, 1946; Parmalee, 1958b), and bones of **Ectopistes migratorious** were the most abundant of the avian remains recovered at an archaic Wisconsin site (Parmalee, 1959). The people once occupying Aztalan also utilized this

species to a considerable extent; over 26 percent of the identified bird bones from this site were those of the passenger pigeon. With but few exceptions (other than the passenger pigeon), the Indian depended upon the river systems and marshes for his source of birds. Only four grouse bones were noted and, unlike the Indians occupying the Cahokia Site in Illinois (Parmalee, 1957), the turkey was rarely taken by the Aztalan people.

Mammals, — Fifteen species of mammals were identified from the faunal sample recovered at Aztalan and, typically, remains of the whitetail deer were the most numerous (88 percent of the total number of identified mammal bones). In addition, over 2,600 large mammal bone fragments (combined Barrett and University of Wisconsin collections) were specifically unidentifiable, but in all probability at least 90 percent of these were referable to **O. virginianus.** The high percentage of deer remains in the faunal sample from Aztalan signifies the importance of this one animal as the basic meat staple in the diet of these people.

Deer bone was also important as a raw material for the manufacture of tools. Barrett (1933: plates 60-62) describes and illustrates many of the 61 bone awls recovered during his work at the site, and the majority of these were made from deer bone. Antler tines and projectile points were not uncommon, and a variety of other worked deer bone objects such as a beamer, and three perforated toe bones were encountered. Of all the animals taken by the Indian, the whitetail deer was singly the most important species.

Remains of raccoon, beaver, muskrat, and mink also attest to the Indian hunting primarily along the rivers and marshes and, although these animals were of value as food and probably for their hides, their combined remains accounted for only five percent of the total. Red fox and badger were probably taken in the semi-open prairie area to the west. The fisher, now extirpated in Wisconsin, occurred along the heavily-timbered rivers probably in limited numbers; although it has been identified from the Durst Site and the Raddatz Rockshelter (Parmalee, 1959) in Wisconsin, remains of the fisher at these sites were numerically few. Elk were apparently un-

common in the vicinity of the Aztalan Site as indicated by the small number of bones found. An elk scapula was recovered that had a rectangular section cut out, the implement being used for the purpose of shredding fibers (Barrett, 1933: plate 71).

In addition to the miscellaneous canid (dog?) bones found in the midden debris and refuse pits by Barrett (1933) and the Wisconsin Archaeological Survey, four nearly complete dog burials were also encountered. Dr. Chandler W. Rowe, Lawrence College, reported (letter of Jan. 13, 1960) finding a dog burial in 1949 and one in 1959. Apparently dogs were the only domestic animal retained by the prehistoric Indians of this region and, judging from the definite interment of at least certain dogs, they were evidently held in high esteem by these people.

A detailed description of the human remains found scattered throughout the midden debris and refuse pits, and their condition, which is indicative of the cannibalistic practices of the inhabitants of Aztalan, has been presented by Barrett (1933). He states that "Our own excavations show that human bones are very prevalent, and that only rarely do we find any whole bones. Practically all bones, large and small, are broken for the marrow and all skulls are opened for the brains.. In view, therefore, of all this evidence we venture to suggest that we may have had here at Aztalan a special development in cannibalism in which human flesh was used as a regular article of food and was treated precisely as was any other animal food. Certainly, in view of the evidence, it is very difficult to believe that cannibalism was a rare ceremonial practice."

There appears to be no question as to the actual practice of cannibalism by the Aztalan people, but the extent of this practice and the need for, or dependency upon, human flesh for food is a matter of speculation. Although the quantity of human bone was not tabulated, it was not comparable in amount with that of deer, and the number of individuals represented was small. Human flesh provided some food, but, based in the quantity of bone recovered at Aztalan and the species involved, these Indians subsisted primarily on crops and the variety of mussels, fish, birds and mammals which occurred in the area.

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ANIMAL REMAINS FROM THE DURST ROCKSHELTER, SAUK COUNTY, WISCONSIN

Paul W. Parmalee

Illinois State Museum, Springfield

Introduction

The Durst Rockshelter Site is located in central Sauk County, Wisconsin, approximately eight miles west of the terminal moraine of the Cary Glacier. The cultural complex ranges from Middle Archaic at the lowest level or Zone (6), through Late Archaic (Zone 5), Woodland (Zones 4 through 2), up to the Late Woodland period (Zone 1) that probably terminated around 1200 A. D. During the period of occupancy, the surrounding hills were probably covered with heavy stands of timber. A small creek (Honey Creek) flows in close proximity to the site and, as evidenced by remains of certain species, some of the adjoining areas were low and marshy. Although not numerous in comparison with the remains of the whitetail deer, bones of the raccoon, beaver and muskrat indicate that such lowland areas were hunted to some extent.

A large quantity of bone and, to a more limited extent, shell, was recovered by Dr. Warren L. Wittry, formerly with the State Historical Society, Madison, and his crew during their summer field work in 1954 and 1955. The cultural complexes of the Durst Rockshelter and their affiliations have been presented in detail by Wittry (1959). Remains of 13 species of mollusks and at least 30 species of vertebrates were identified from the sample of faunal materials excavated. The species of mollusks and the number of identified remains of each are recorded, by zones, in Table I, while Table II is a list of the vertebrates represented and the number of identified remains of each species recovered in the six zones.

TABLE I. The Species and Number of Mollusks Recovered at the Durst Rockshelter, Sauk County, Wisconsin.

Species	Zone						
(Fresh-water mussels)	I	II	III	IV	V	VI	Tot.
Elliptio dilatatus, Spike	2	1	4	2		1	10
Lampsilis ventricosa, Pocketbook	1	9	9	1	3	2	25
Amblema costata, Three-ridge	2	3	1		2		8
Actinonaias carinata, Mucket	1	1				3	5
Cyclonaias tuberculata, Purple Warty-back		1					1
Plethobasus cyphus, Sheepnose			3				3
Lasmigona complanata, White Heel-splitter			1				1
Properta alata, Pink Heel-splitter			2		1		3
Lampsilis siliquoidea, Fat Mucket			1				1
Lasmigona costata, Fluted Shell				4			1
Strophitus rugosus, Squaw Foot				1			1
Unidentifiable Mussel Fragments	28	54	41	32	17	20	62
(Snails)							
Anguispira alternata	6	12	3	3	2	6	32
Mesodon thyroidus	2						3
							35

TABLE II. The Species and Number of Vertebrate Remains Recovered at the Durst Rockshelter, Sauk County, Wisconsin.

Species	Zone						
(Turtles)	I	II	III	VI	V	VI	Tot.
Blanding's Turtle, **Emys blandingii,** Painted Turtle, **Chrysemys picta,** and/or Map Turtle, **Graptemys** Spp.	12	12	13	17	9	11	74
Box Turtle, **Terrapene carolina**	6	4	2	6	4	1	23
Blanding's Turtle, **Emys blandingii**		1	1			1	3
Soft-shelled Turtle, **Trionyx** sp.		1	1				2
Snapping Turtle, **Chelydra serpentina**			1			2	3
Painted Turtle, **Chrysemys picta**		2	1				3
							108
(Birds)							
Turkey, **Meleagris gallopavo**	1	2	2	4	3	2	14
Ruffed Grouse, **Bonasa umbellus**	3		2	2	1		8
Sharp-tailed Grouse, **Pedioecetes phasianellus**	1	3	3			1	8
Small Passerine	1						1
Passenger Pigeon, **Ectopistes migratorius**			1				1
Canada Goose, **Branta canadensis**				2			2
Mallard, **Anas platyrhynchos**				1			1
Red-shouldered Hawk, **Buteo lineatus**					1		1

Unidentifiable Bird Bone Fragments	1	2	2				36
(Mammals)							
Whitetail Deer, **Odocoileus virginianus**	623	1140	1042	1001	449	405	4660
Beaver, **Castor canadensis**	1	4	2	3	1	8	19
Raccoon, **Procyon lotor**	15	14	10	8	4	8	59
Woodchuck, **Marmota monax**	3	1		2	1	1	8
Fisher, **Martes pennanti**	1	1				1	3
Red Fox, **Vulpes fulva**	1		2(2?)	1(?)			3
Gray Squirrel, **Sciurus carolinensis**	2		1	1	1		5
Black Bear, **Urus americanus**	1		1				2
Small Rodent		1	1				2
Canis, Dog, **C. familiaris** (?)		4	1	2	1		8
Mink, **Mustel vison**		1					1
Elk, **Cervus canadensis**	1	2	3	1	2	5	14
Coyote, **Canis latrans**	1	1(?)			1		2
Chipmunk, **Tamias striatus**	2	3				3	8
Muskrat, **Ondatra zibethica**	3	3			1		7
Cottontail, **Sylvilagus floridanus**	1	1			1		3
Meadow Vole, **Microtus** Sp.		1					1
Gray Fox (?), **Urocyon cinereoargenteus**		1					1
Otter, **Lutra canadensis**		2					2
Unidentifiable large mammal bones, most probably deer	5553	8802	6813	6686	3157	3622	4808

Accounts of Species

Mollusks: — Only two species of terrestrial snails were found in the midden debris and both are native and common to the region. The small quantity of specimens (35) indicates that gastropods were not utilized for food and the shells are the remains of individuals that normally inhabited the rockshelter. However, three specimens of the river snail, **Anculosa praerosa**, a portion of each shell having been ground away so as to alter it for use as a bead, were recovered. These snails were obtained either on excursions to the south or by trading, since the nearest locality in which they could have been obtained was the lower Wabash River and Ohio River in southeastern Illinois.

Considering the quantity of bone remains present and the comparatively long period of human occupancy at the Durst Rockshelter, relatively few shells of fresh-water mussels were encountered. Twelve species of naiads were identified, all of which still occur today in the streams and rivers of Wiscon-

sin. Although a few species represented are considered typically headwater or small stream forms (e. g., **A. costata, L. costata**), the other species may be found in bodies of water varying in size from the smaller streams to the large rivers. Nearly all of the shells recovered at the Rockshelter were thick, heavy-shelled specimens, typical of a large stream or river, and thus suggesting that they had been obtained from a river carrying a considerable volume of water.

Apparently the fresh-water mussels were used very little for food by the people occupying the Durst Rockshelter, and only occasionally did they form a supplement to the Indian's staple diet of deer meat. Only 66 specimens were identified. A broken, very thick-shelled specimen of **Lampsilis ventricosa** appeared to have been drilled, thus suggesting its use as a hoe. At least one other shell of this deeply-convexed mussel and a single specimen of **Actinonaias carinata** that were recovered showed indications that the pseudocardinal teeth had been ground down; such altered valves were probably used as dishes or similar utensils.

Vertebrates: — As in the case of faunal remains recovered at the Raddatz Rockshelter (Parmalee, 1959), an archaic site located about one mile from the Durst Rockshelter, no fish bones were encountered. The river(s) from which the mussels were obtained contained fish, but why this source of food was not utilized by these people is a matter of speculation. Turtles, on the other hand, were evidently collected whenever available as evidenced by the numerous shell sections in the midden deposits. At least four species are represented, and although turtles were probably eaten, the amount of food they supplied was actually small in comparison with other vertebrates.

Numerous carapace fragments and sections bore scrape marks and other evidence of alteration; apparently the flesh was removed and the inner surface of the shell ground or scraped smooth. These shells would serve as natural dishes, bowls or similar utensils, particularly the box turtle, and they were probably used in such a capacity.

Birds were poorly represented in the faunal sample from the

Durst Rockshelter and, as a group, were probably of little significance as a source of food. Bones of seven species were identified and the remains of only one, the turkey, occurred in all six zones. The paucity of avian remains at this site is noteworthy since those from the Raddatz Rockshelter totaled 19 species and 315 identified bones (Parmalee, op. cit.). Of special interest is the record of the passenger pigeon; only one bone (humerus) was identified from the Durst Rockshelter faunal sample while 149 bones occurred in the midden deposits at the Raddatz Rockshelter.

The remains of three species (turkey, ruffed grouse, sharp-tailed grouse) comprised 93 percent of all the bird bones recovered. The Indians probably hunted the wooded hillsides and bottomland thickets for these birds but, as evidenced by the general scarcity of bird bones in the midden deposits, apparently little emphasis or importance was placed on birds as an important source of food.

As a group, mammals were the most numerous both in quantity of identified remains and in number of different species represented. Typically, bones of the whitetail deer were the most abundant and constituted 96 percent of the total identified mammal remains. In addition, there were over 34,600 unidentifiable large bone fragments; at least 90 percent of them were probably referable to **O. virginianus.** Although elk were present in the area, the small number of bones recovered (14) indicates that this large animal was uncommon and/or rarely killed by the Indian. The tremendous number of bones of the whitetail deer, in comparison with all other species, points to the fact that the flesh of this one species comprised the major meat staple in the diet of the Indians occupying this site.

Preservation of bone was poor in Zone VI (Archaic period) because of its high acidity. The higher phosphate content of this zone suggests that many bones originally contained in it have completely disintegrated. The species represented in the nearby Raddatz Rockshelter, where preservation was excellent, would seem to be a better indication of the animals utilized by Archaic Indians in the area. The smaller number of species found in the Woodland zones of the Durst Rock-

shelter may reflect a less intensive usage of rockshelter sites during this time period.

It may also (or rather?) represent a shift in hunting pattern from a more complete utilization of any available species by the Archaic people to a more specialized hunting (for primarily the whitetail deer) by the Woodland people. The predominance of projectile points, compared with other types of flint tools found at the Durst Rockshelter (Wittry, 1959), suggests that the occupants used this site as a hunting camp and that they sought primarily larger game.

Bones of the raccoon and the beaver were the second and third most numerous, respectively, of the 18 species of mammals identified. Like the whitetail deer and elk, bones of these two species occurred in all zones, but considering the actual buk of meat supplied by these mammals in comparison with the deer, they were probably important only as an occasional supplement to deer meat. Like the raccoon and beaver, other mammals such as the otter, woodchuck, muskrat, cottontail and fox were probably taken whenever possible and their hides as well as flesh were utilized. A cut section of a beaver incisor tooth was recovered that exhibited cut or scratch marks (on the natural cutting edge), thus indicating its use as some type of tool or utensil.

The people that occupied the Durst Rockshelter had few domestic dogs as evidenced by the scarcity of canid remains specifically referable to **Canis familiaris.** Of some interest were two mandible sections of the coyote; remains of this species are rare in archeological sites east of the Mississippi River. The fisher is now extirpated from Wisconsin (except for recently re-introduced stock), but formerly was not uncommon in the heavily timbered bottomlands. Remains of this species at the Durst Rockshelter (jaw and skull sections, representing at least two individuals) were to be expected although bones of this mustelid are rare in midden deposits.

Most of the bone artifacts consisted of awls fashioned from splinters of bone, probably those of the deer. One awl had been made by sharpening the small end of a deer ulna; only

one of the awls recovered had been made from a bird bone splinter. Twenty-one deer antler tips were found that appeared to have been used as some type of tool. It is interesting to note that, except for these 21 antler tines, only three additional antler fragments were recovered in the midden deposits. The skull sections of nine male deer were found; these animals had been killed during the antlerless season. The skull of a spike buck was recovered that still had a section of the antler attached. Although not conclusive, these data suggest that the Durst Rockshelter was occupied primarily during the summer seasons; the bucks at this period would be without antlers.

The sample of animal bone and shell recovered at the Durst Rockshelter has served as an index to the food habits of the people once occupying this site. These prehistoric Indians apparently utilized most of the edible species that they were able to capture, although the predominance of whitetail deer bones indicates that this one species was by far the most important as a source of food and probably hides.

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Our thanks to DR. WARREN WITTRY who ably took over the editorship of the Wisconsin Archeologist while Dr. Ritzenthaler was in Africa. We also take this opportunity to wish Dr. Wittry success in his new position at Illinois State Museum at Springfield. Wisconsin will miss him.

MR. ROBERT L. HALL has left his post as director of the Lincoln-Tallman Museum at Janesville to take a position with the Institute of Indian Studies at the University of South Dakota.

MR. LEE PARSONS is the new assistant curator of anthropology at the Milwaukee Public Museum replacing Dr. Arthur Niehoff now at work with the International Cooperation Adminstration in Laos.

PRESIDENT PHIL WIEGAND AND MRS. WIEGAND, SECRETARY spent a month in Mexico, returning quite excited about the Mayan ruins at Chichen Itza in Yucatan.

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CLIMATIC CHANGE: A CONTRIBUTORY CAUSE OF THE GROWTH AND DECLINE OF NORTHERN HOPEWELLIAN CULTURE, James B. Griffin 21

AN "OLD COPPER" CRESCENT FROM ALBERTA, CANADA, Robert E. Ritzenthaler 34

THE RED OCHRE CULTURE: AN EARLY BURIAL COMPLEX IN NORTHERN INDIANA Charles H. Faulkner 35

THE COLLECTOR'S CORNER 50

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CLIMATIC CHANGE: A CONTRIBUTORY CAUSE OF THE GROWTH AND DECLINE OF NORTHERN HOPEWELLIAN CULTURE

By James B. Griffin

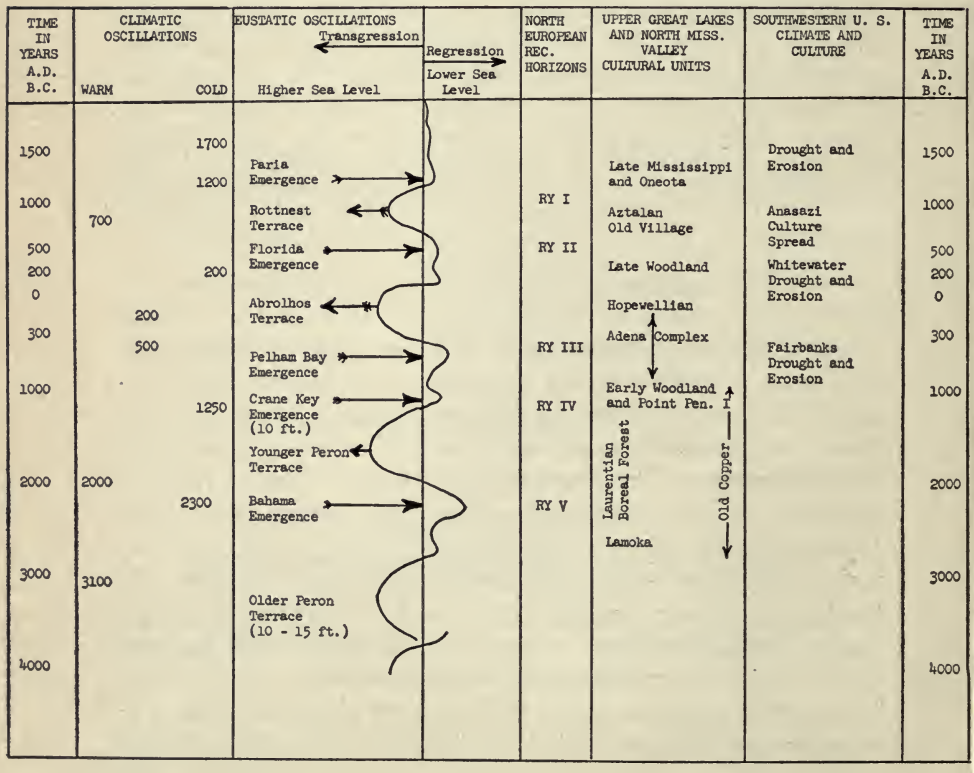
During the period of approximately 300 B. C. to A. D. 300 there developed in the central Ohio Valley and in the Illinois Valley a prehistoric cultural complex known as Hopewell or Hopewellian which was the culmination of a long developmental sequence. The Hopewell sites, of Ohio particularly, were prominent among those which were attributed to "The Mound Builders" during the nineteenth century because of the size and complexity of their ceremonial earthworks and burial mounds, the quality of their craftsmanship, and the evidence of widespread barter and exchange from the Rocky Mountains to the Atlantic and from the Gulf to the Great Lakes. An early explanation of the disappearance of the so-called "Mound Builders" was that they had been destroyed and dissipated by the arrival of the war-like and savage Indians.

One of the last attempts to suggest causes for the Hopewell decline was written in 1950 (Griffin, 1952, p. 361) in which I suggested that perhaps Hopewell culture had reached a climax beyond which it could no further develop, essentially because its subsistence base would not allow it to do so. Other factors might have been "cultural fatigue", a concept borrowed from Kroeber; the continuing destruction and burial of their finest art products might have been instrumental in the disappearance of their art style; and the growth and development of the Mississippi culture with a markedly different cultural orientation and values may have had a disintegrating effect on the Hopewellian cultural system. These factors were hardly satisfactory explanations of Hopewellian deterioration. The present paper suggests that a minor phase of cooler climate in the northern Mississippi Valley and Great Lakes

areas was a significant contributing factor to a decline in the reliability of agricultural products, which in turn resulted in the decline from Hopewell, or Hopewell-Woodland, to early Late Woodland cultural forms. Hopewellian was such an expanding culture which moved north and west from its area of most complex development, but then declined and subsided into simpler Woodland expressions. Archeological investigations all over the world substantiate the thesis that the more complex cultures with the most productive economic base tend to dominate and supplant less productive societies.

One difficulty with the hypothesis is that direct evidence of corn from Hopewellian sites is limited to three or four sites.

CLIMATIC CHANGES REFLECTED IN SEA LEVEL CHANGES (FAIRBRIDGE, 1958), VEGETATION AND CULTURE IN EUROPE AND NORTH AMERICA



For some years I have been saying that corn was found at the Harness site in Liberty Township, Ross County, Ohio, based on a quotation by Mills from Putnam (1886, p. 426). This is unfortunately simply a reference to cataloged material from the site and a locus is not given. It may be, however, that the corn which is mentioned along with "cloth, seeds, nuts, corn, and grass, all charred," is from one of three mounds identified by an "m" north of the great circle of the Harness Group. In this mound, Putnam (1886, p. 405) found a large bed of ashes and charcoal on the ground surface with many fragments of pottery and cut pieces of mica. "A large piece of grass matting and a mass of burnt seeds, nuts and acorns, were found in the bed of ashes." Perhaps after this material was sorted and cataloged, the corn was discovered. It has not been studied.

Corn was also found at the Turner site, Hamilton County, Ohio, where in the center lower level of Mound 1, Putnam and Metz found a "fireplace" some 7 feet in diameter with four pottery vessels. "Mixed with the ashes were charcoal, flint flakes, charred corn and corn-cobs." (Willoughly, 1922, p. 20). The vessels are illustrated in the same report on Pl. 22, Fig. g-i; and Plate 23. Two of these are cordmarked jars, one is a plain bowl with six to eight shoulder lobes, while the fourth is a zoned rocked-dentate flat bottomed beaker. This corn also, has not been studied.

The third Hopewell site to produce corn is the Renner site near Kansas City, Missouri, where Wedel (1943, p. 26) found "six short wide kernels of maize" and "several small beans resembling modern pintos in size and shape". The corn and beans were in a refuse pit which was clearly part of the Hopewellian complex. This site may be dated with some confidence to the latter half of the Hopewellian period from about 50 B. C. to A. D. 200 (Griffin, 1958).

The fourth site is the Ansell site of McGregor, but is what many others have called the Knight village site in Northwestern Calhoun County, Illinois. The corn from here has been studied by Dr. Hugh C. Cutler who believes that the corn "probably resembled Guatemala Tropical Flints". The students who dug a pit in the village carefully ascertained that

the corn and corn stalk fragments were well below the plow zone. McGregor (1958, p. 169) says, "The charred corn had been thrown into a trash pit in the village site together with several sherds of definite Hopewell type. There can therefore be no doubt that this represents the first evidence of Hopewell corn in Illinois". Since I have collected from this village site myself on a number of occasions and knew that it has not only Hopewell, but Late Woodland and Mississippi pottery, I was somewhat sceptical of McGregor's prepublication claims for the certain equation of Hopewell - corn remains. McGregor should not have published the sherd count for the pit in the (Ansell) Knight village for from it we can see that the pit at all three levels is dominantly Late Woodland and that there is a significant proportion of Mississippi sherds in all three levels. My interpretaton of the corn is, then, that it is perhaps attributable to the Mississippi occupation, but that, from the evidence presented we can not be certain who grew and threw away the corn.

Archeologists now recognize Hopewell as a cultural climax which is the result of a long period of development in the eastern United States plus the stimulation of some agricultural activities and the dissemination of some ideas and practices from Mexico. Hopewell culture in the Illinois Valley is built on an earlier Woodland and Archaic background, and in the Ohio area on an earlier Adena and Archaic base. This does not deny that Adena lasted up to the Hopewell culture development for this has been known since the famous human effigy pipe was uncovered in 1901 wearing copper ear spools. Within the total Hopewell time span of about 600 years, the period of some 200 years on either side of A. D. 1 is that in which the Hopewell cultural characteristics, primarily from Illinois, where a developmental sequence is known, spread up into the lower peninsula of Michigan as far as Newaygo County north of Grand Rapids, and also spread into the Saginaw Valley. Hopewell culture also spread from Illinois into southern Wisconsin, eastern Iowa and southeastern Minnesota, and across central Missouri to eastern Kansas and northeastern Oklahoma. During the last ten years it has become clear "that the several regional variants of Hopewell in the areas mentioned

above did not suddenly disappear but that there was a gradual decline of both the quality and quantity of the things they left behind them and the gradual elimination of the distinctive types which are Hopewell. All phases of the culture reflect this change. This degeneration into distinctive local variants of Late Woodland cultures has been difficult to explain.

I have commented on some of these regional developments out of Hopewell in another publication (Griffin, 1958) and it is reasonable to suggest that a portion of the Wisconsin Effigy Mound culture is a gradual decline from Hopewell. In general I would adopt the position of Wittry (1959, pp. 253-261). I would suggest, however, that a fair amount of pottery has been found in Wisconsin and Iowa which has a rocker stamp body treatment and a rim which is now called Madison Cord-Impressed. Some of these instances are cited by Wittry. The best example of this association of Hopewell and Effigy Mound styles on the same vessel, however, are from the Lane Farm Group in Allamakee County, Iowa, where three vessels with the above mentioned combination were found (Keyes, 1934, p. 346), at the Slinde Mound, also in Allamakee County, a poorer quality vessel was excavated. During the 1930's such an association was viewed as indicating the contemporaneity of classic Hopewell and developed Effigy Mound groups. In general, over all rocker stamped decoration on Hopewell pottery is late within the northern Hopewell ceramic styles, and cord impressed rims on such vessels in Iowa and Wisconsin may be viewed as the beginning of a new style in rim decoration. This would mean that cord impressed rims begin before the Effigy Mound culture has developed into a distinctive complex such as was presented by Rowe (1956). The majority of Effigy Mound traits as illustrated by him are post-Hopewell in time. I will suggest in this paper that the relative poverty of Effigy Mound and other Late Woodland complexes may be, at least in part, attributable to a climatic deterioration in the Upper Mississippi Valley.

Three years ago (February, 1957) I prepared a paper "An Hypothesis for the Prehistory of the Winnebago" (Griffin, in press) which presents the theory that the marked decline

in cultural development from a dominantly agricultural complex such as Aztalan to a mixed hunting-gathering economy such as Oneota in the northern Mississippi Valley was due to the minor climatic fluctuation of the A. D. 1200-1600 period. Prehistoric Indian groups who are the probable ancestors of the Winnebago-Iowa-Oto and Missouri moved north about A. D. 1000 from the Cahokia area opposite St. Louis, with a full agricultural economy and reached as far north as the area around the mouth of the Minnesota. Their way of life as reflected in their archaeological remains changed considerably.

The postulated shift from a full Mississippi agricultural complex to Oneota is not to be explained on the basis of soil depletion, inability to handle the soils of a glaciated area, the opposition of amalgamation or resident Late Wodland populations, or a shift in culinary taste from corn to wild rice. The cultural change is not explained by the death of the bold leaders who had led their people into the wild northland, or the geographic distance from other Middle Mississippi centers.

To substantiate these changes I have had to depend upon evidence from other areas, such as the American Southwest, from northern European historic records (Brooks, 1949) and vegetational changes (Godwin, 1956); and from the proposed indications of world-wide fluctuations in sea level (Fairbridge, 1958). It is assumed then that not only major climatic changes such as the glacial periods and the subsequent major post-glacial vegetational changes in North America and Europe are contemporary but that minor climatic alternations which are documented on a world-wide basis, should also occur in the north central United States. These climatic variations would have their most marked effect on the early agricultural societies. While some of them are not yet too accurately fixed in an absolute chronology, particularly beyond two to three thousand years ago, their general sequence and estimated dates give confidence that in the future they will become as firmly established as the major climatic changes.

The minor cold period of A. D. 1200-1500 historically recorded in Ireland, Greenland, and northern Europe corresponds to the last recurrence horizon (RYI) in the raised bogs

of southern Sweden, to the period of drought and erosion in the Southwestern United States and consequent shrinking of the area occupied by agriculturists, and also to the last important cooling and drop of sea level—the Gulf of Paria land emergence. The recurrence horizons are found in raised bogs and are a vegetational change marked by a climatic shift from relatively warm and dry conditions which has stopped plant growth, to cooler and moister periods which allowed new sphagnum growth.

It is postulated that this climatic fluctuation was sufficiently effective to reduce the **reliability** of the prehistoric agricultural crops in the northern Mississippi Valley and the resultant inability to have an agricultural surplus had a marked effect on the cultural behavior of the people. They were forced, over a period of five or six generations to shift to a mixed hunting-gathering-agricultural economy which was in effect at the time of European exploration in A. D. 1650-1750.

Dr. R. J. Ruppe has informed me that there is a noticeable increase in bison bones from his deep Mill Creek sites in northwest Iowa and I would expect that if the hypothesis for the economic shift from Aztalan to Oneota is true that it should also be reflected in similar changes in the South Dakota prehistoric agricultural village sequence.

During the preparation of the paper on the prehistoric background of the Winnebago, it became clear that a similar climatic case could be prepared for Hopewell and I have been talking about such an explanation to my colleagues and propounding the hypothesis in my University classes. It is now time to present the hypothesis in published form and produce the inevitable modifications which other minds and disciplines will give to the proposal.

The relatively cold period of A. D. 1200 to 1700 was preceded by a warmer period from approximately A. D. 700 to 1200 which was responsible for a rise in sea level two to three feet above the present. This rise produced the Rottnest Terrace in Australia, the Grand Chener Terrace in Louisiana and "in the Mediterranean regions, much drowning of coastal structures took place" (Fairbridge, 1958, p. 479). This corresponds to the marked growth and expansion of the Anasazi

Culture in the Southwest due to more favorable moisture conditions and of the Early Mississippi culture development in the Mississippi Valley.

The gradual decline and demise of the Hopewell culture in the Ohio and northern Mississippi Valley appears to correlate well with the cold period from around A. D. 200 to A. D. 700. This is the period attributed to the "Whitewater Drought" in the Southwest which is expressed in tree rings and evidences of erosion (Antevs, 1955, p. 330). It is also indicated by the RYII recurrence horizon succeeded by cool moist conditions in southern Sweden around A. D. 400 (Godwin, 1956), and the climatic shift to a cooler period in Alaska dated about A. D. 500. It is suggested in this paper that a major contributing factor to the Hopewell decline in the north was the climatic deterioration which would have gradually affected their agricultural productivity in the same way, if not more drastically, because of less adapted crops, than the later deterioration of A. D. 1200 to 1700 affected the Mississippi culture people in the Upper Mississippi Valley.

The Hopewell cultural height of 200 B. C. to A. D. 200 corresponds neatly to a warm period which had a rise in sea level of 5' to 6' above the present level of the sea as recorded in the "Abrolhos Terrace" of Australia and of the Perdue Chenier ridge of Louisiana and to the relatively warm period of recurrence horizon II in northern Europe. In England "after the opening of the Sub-Atlantic period most datings of plant material rely upon archeological correlations, but some further assistance is available in a last and minor eustatic rise in sea level during Roman time, a rise which is especially evident in the uppermost clays and silts in the Wash and Somerset Levels, but which can also be found recorded more widely" (Godwin, 1956, p. 63). The Roman period in Britain may be said to begin in A. D. 43.

The RYIII recurrence horizon is the original "Grenzhorizont" marking the end of a warm period and return to cooler moist conditions in northern Europe of 600 - 500 B. C. Antevs (ibid) has dated the "Fairbanks drought" in the Southwest at 500 B. C. The sea level change for this cooler period is to a position 10' below the present stand. It is represented by the

drowned forest at Pelham Bay which had grown during a time of lower sea level and was submerged by the rise of the succeeding warm period.

The RYIV warm period horizon is dated at 1250 B. C. (Karlstrom, 1957, has 1500 B. C.) and should have been followed by a cold, then a warmer interval leading to bog stabilization at the RYIII level at 500 - 600 B. C. This preceding cold period has a sea level 6' below the present and is the period of the Crane Key land emergence. From 2000 - 1800 B. C. there was a warm period represented by a sea level change from one equivalent to the present, to one 10' above the present which caused the Younger Peron Terrace and perhaps drowned the Boylston Street fish weir in Boston. This warm spell was preceded by the cool period intervening between the RYV horizon of 2300 B. C. (Karlstrom has 2500 B. C.) and the cool period has a sea level drop to 10' below the present level at which time the Bahama land emergence took place.

The next earlier major warm period is dated about 3100 B. C. with a sea level 10' to 12' above the present and which may be the Altithermal maximum. It is correlated with the Older Peron Terrace of Australia.

It is difficult to cite evidence for floral records for climatic changes in the northern Mississippi Valley and Great Lakes area to match those of the northern European recurrence horizons. Most of the American palynologists have been so intrigued with demonstrating the major climatic shifts of the post-glacial period that they have not spent much time on any less apparent changes of the last 3000 to 4000 years. They are, however, noticeable variations in the pollen profile of the Mud Lake bog of Cheboygan County, Michigan above Sears period IV to which I will assign a date of about 2000 B. C. This warm period falls at the 17' to 19' level from the top (Sears, 1942) and marks a significant appearance of oak and a decline in spruce and pine. Sears made the interpretation that this level corresponded to his recognition of a post-glacial warm, dry period which can now be dated in the southern Great Lakes area about 2000 B. C. From the top of the pollen profile of the 17'-19' level there are, I think, minor yet signif-

icant variations in the proportions of pollen of trees adapted to cool, moist conditions and those whose growth is promoted by warmer, dryer conditions. These minor fluctuations should reflect the minor climatic oscillations recognized in other areas in vegetational growth and from other climatic evidence.

Another example of arboreal variations is provided by the Hartford Bog near South Haven, Michigan (Zumberge and Potzger, 1956, p. 282). Here the 10' level below the surface is interpreted by the authors as equating with the 2000 B. C. date of the South Haven peat profile and which corresponds to the post-glacial maximum as interpreted by Potzger. The dramatic changes in the pollen counts are certainly below this level to the 30' depth which begins with white spruce dominance. There are noticeable changes above this level, however, which I think may reflect alternate warm and cold phases. I am prepared to suggest that the ½ foot level marked by an increase in white and jack pine, and beech, and a decrease in oak and elm represents the cold period of 1200 - 1700 A. D. which has been postulated as affecting the Aztalan to Oneota cultural shift in the Upper Mississippi Valley. The 1' to 2' level has a decrease in the pines, a marked increase in oaks and a decrease in beech so that this section may be equated with the A. D. 700 - 1200 relatively warm period which marks the rise of Mississippi agricultural practices in the Cahokia area and their movement north into Wisconsin and Minnesota. Below this level there are minor changes recorded. I am tempted to suggest that the five foot level with its low pine, rather high oak, elm, beech, maple, and hickory represents the proposed Hopewell warm period on both sides of the beginning of our era. There are additional alternatives between the 5' and the 10' level, which I think reflect alternating cool, warm, and cool phases until the post-glacial maximum of the 10' level is reached.

Experienced individuals in pollen analysis have cautioned me about the intricacies and problems of interpretation of pollen profiles. However, this archaeologist has rushed in where palynologists apparently fear to tread. I believe that available pollen diagrams for the western Great Lakes areas do show minor climatic fluctuations which will eventually be

demonstrated to agree in their alternating warm and cool periods with those already demonstrated in northern Europe. Future pollen studies in the north central part of the United States should make a study of either a continuous section of the upper half of the cut, or at least at 5 cm. levels, instead of every foot, or half-foot, or half-meter. If, in addition, the non-arboreal pollen could be analyzed for its contribution to suggestions of climatic change, we should then have adequate data to either prove the similarities of change or to prove they did not take place. In addition, archaeologists should incorporate into their field program the collection of pollen samples both from within the site and from adjoining areas where a stratigraphic record of soil changes may be tied to features of the site. If we do not get preserved corn cobs and kernels from our pre-Mississippi sites we might be able to get corn pollen, which is easy to identify, from a clearly Hopewellian or earlier context. We may also hope that palynologists will be tempted to check more carefully their pollen profiles of the last 4000 years. Probably the best areas to check would be within a hundred miles or so on each side of the present botanical tension zones (Potzger, 1948). The tension zone is a relatively narrow area which marks the boundary between, for example, the coniferous and broad leaved forests.

Summary

It is not to be expected that this hypothesis of a climatic factor in the decline of Hopewellian culture in the north will satisfy people looking for a complete answer to prehistoric problems. It is not such a complete answer. It will be argued that since there is so little evidence for agriculture in Hopewell how could its decline come about by the uncertainty of, or failure of, crop maturity in the northern Mississippi Valley? I have tried to indicate that I am aware of the scarcity of definite data for Hopewell crops and hope more careful field work will give additional evidence of Hopewell agriculture. One of the cultural factors I believe favors this hypothesis is that there is no comparable cultural decline in the Lower Mississippi Valley Hopewellian levels (Marksville, Troyville, Issaquena) into the Coles Creek phases which are equivalent to Early Mississippi in time and in some basic cultural traits.

The minor climatic changes postulated here would sufficiently affect the growing season in the north, but would not do so in the south. I am not tempted to suggest that a major population movement resulted as a result of the cold cycle in the north, which accounts for the dispersion of Hopewell to the west and south, because the climatic deterioration well to the west and south, because the climatic deterioration would have been too gradual to produce a marked impression on one or two generations of people. A minor group movement in early Late Woodland times is that of the Maples Mills Culture from southern Wisconsin to the Peoria area. By and large the present picture is that the various Hopewellian cultures declined and changed to local Late Woodland groups. This cultural regression took place from Marietta, Ohio, to Kansas City, Missouri, and from southern Illinois to Grand Rapids, Michigan. A climatic change to a shorter growing season from A. D. 200 to A. D. 700 is suggested as a contributing factor to the explanation of this cultural change.

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AN "OLD COPPER" CRESCENT FROM ALBERTA, CANADA

Robert E. Ritzenthaler

The interesting thing about this specimen is that it was found considerably away from the zone of Old Copper distribution. Specifically it was found by M. A. E. Turner, 150 miles northeast of Calgary on Castor Creek about 2 miles upstream from its confluence with the Battle River.

Dr. R. G. Forbis of the Glenbow Foundation in Calgary, who reported the find to us, gives the following information on it: "The Crescent is 204 mm. long, 72 mm. high from the bottom of the blade to a line drawn between the two prongs), and 2 mm. thick. It is extremely well made in comparison to others I have seen illustrated. It is clearly hand-made, however, for the prongs are unequal in length, and there are patches on the blade where excess copper has been folded back and pounded in. There is a heavy patina on both faces."

While Old Copper material is not unusual for eastern Canada, its appearance in western Canada is extremely rare. The position of this specimen in worthy of documentation even though it is likely that it arrived at its distant location through trade.

THE RED OCHRE CULTURE: AN EARLY BURIAL COMPLEX IN NORTHERN INDIANA

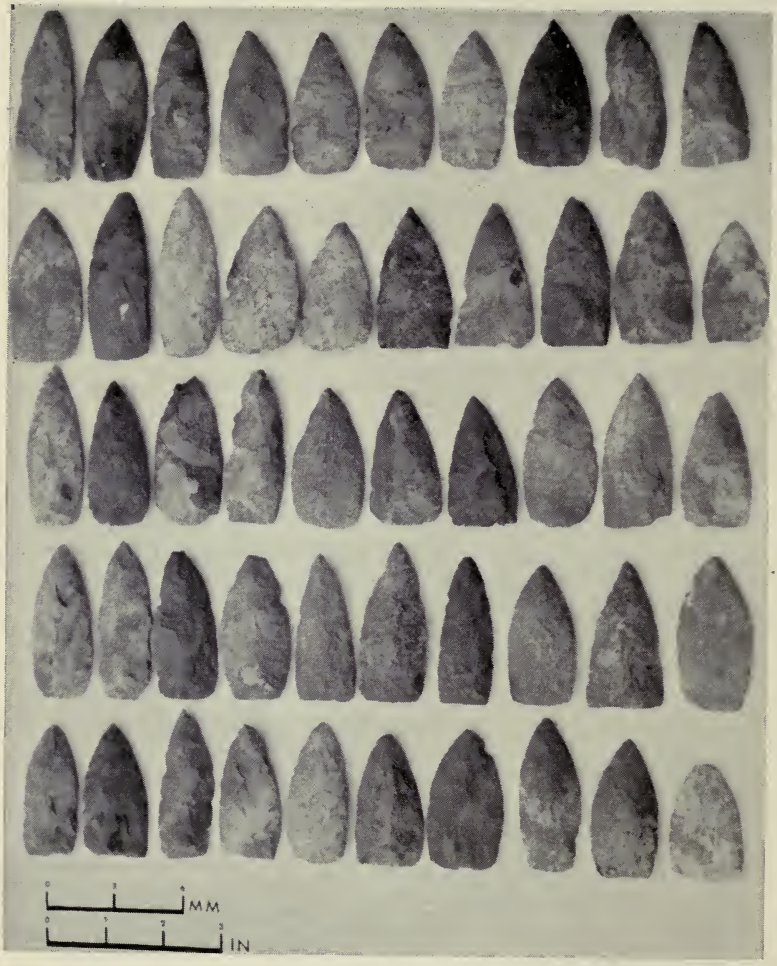
By Charles H. Faulkner

During an archaeological survey of Marshall County, Indiana, in the summer of 1959, the author was informed by a local collector that over 300 cache blades had been found on a site in the county. This site was immediately surveyed, and last fall the collector, Mr. Russell A. Quillen of Plymouth, Indiana, generously loaned these blades to the writer for examination and photographing. A paper describing these cache blades and postulating cultural affinities for these artifacts was presented at the Indiana Academy of Science meeting for 1960. Because no diagnostic material was found with this cache, the overall size and shape of the blades had to be used for a comparison to similar caches found in the eastern United States. The size and shape of these specimens suggested affinities to a Middlesex - Adena - Red Ochre horizon, and the final conclusion was that these artifacts were deposited here by a Red Ochre-like culture.

Since this fall report, the author learned of three more caches of these ovate-trianguloid blades that were found in Marshall County and two neighboring counties. One of these discoveries is very significant, for the cache was found in association with skeletal material and artifacts. Unfortunately, this discovery, like the others to be described forthwith, was made by non-professionals, and a verbal description of the find had to suffice. This burial and the grave accompaniments of seven large corner-removed or stemmed points or knives, rolled copper beads, and a large cache of the ovate-trianguloid blades will be more fully described later. These mortuary offerings, suggestive of a Red Ochre-like complex, substantiate the earlier theory that the cache blades are a product of an Archaic - Early Woodland horizon.

The cache blades were the first indicators of the presence of this early mortuary complex in the northern part of the state, so a reiteration of a portion of the report on the site where they were initially found and a description of these artifacts should be presented first.

In the spring of 1947, Russell Quillen noticed that several blades of a distinctive type had been exposed in a relatively small area on a sand ridge in Green Township, Marshall County, Indiana. Obtaining permission from the land owner to excavate on the ridge, Mr. Quillen and his son troweled and brushed away the sand in the area where the blades were being unearthed by wind and cultivation. In an area



—Courtesy Indiana Historical Society

FIG. 1. Typical ovate-trianguloid blades from cache of 300+ blades found on Site Mr-215 in Marshall County, Indiana.

not more than five feet wide and ten or twelve feet long, over 300 whole and broken ovate-trianguloid cache blades were recovered (fig. 1). The ridge had been cultivated in an east-west direction, and the scattering of the blades in this direction provides ample evidence that the upper layers of the cache had been disturbed by the plow. Repeated cultivation of the site can also be held accountable for the many broken blades included in this discovery. Concerning the excavation, Mr. Quillen stated that "in one area not more than 18 inches in diameter, the points lay in a circle pointing in for several layers." The cache blades were found to a depth of 18 inches below the surface. No associated artifacts or skeletal material was noted with them, nor was the surrounding soil discolored by artificial means (i. e. red ochre).

The site was surveyed in the summer of 1959, and was designated number Mr-215. This visit to the site disclosed the following aspects of the natural setting.

The locus of the cache discovery is a sand knoll which is part of an undulating sand ridge that traverses the countryside in a general east-west direction. These sandy ridges of Pleistocene dune origin were the favorite camping sites for the early prehistoric inhabitants of Marshall County, as well as the historic groups. The underbrush was probably not rank on this acid soil, and oak trees undoubtedly dominated the larger flora on the site. Several hundred yards south and below the ridge is Eddy Lake, a small pond with an outlet creek meandering to the east.

The cultivated portion of the ridge boasts of two knolls on which occurs evidence of occupation. The "saddle" between these two natural mounds displays a gravelly subsoil and no evidence of habitation. A country road cuts through the ridge just east of the knoll on which the cache was found. On the east side of this road is a sand knob which appears to be the highest point on the ridge, but this area was in pasture, thus making a surface survey impossible.

An examination of the cultivated portion revealed fire-cracked rock and chips and spalls of flint and chert in profusion. Several projectile points of a generalized Woodland type were found, plus scrapers and other crude tools. The

only possible diagnostic evidence discovered on the cache knoll were two fragments of grit-tempered, cord-marked pottery. Although minute, the fragments appear to represent a thin-walled vessel of a late time period; however, considering the size of the site (several acres), the portion surveyed appears primarily non-ceramic. In any case, it is probably safe to assume that this site was utilized as a camping ground for several thousand years.

Mr. Quillen claims 463 whole and broken specimens were found on the site during the spring of 1947. This number includes a few blades that were picked up on subsequent visits to the site. His son received at least 50 whole blades. The writer examined the artifacts remaining in Mr. Quillen's possession. This sample of the cache contains 114 whole blades plus 58 partially broken ones. Badly damaged specimens include 77 bases and 43 points. Twenty blade fragments round out the number of artifacts available for study. One disc-like scraper of the same lithic material as the blades; a side scraper of a different chert medium; and a small, broken notched point were found included with the blades. These artifacts were probably strays from the habitation debris which abounded in the sand around the cache deposit.

The blades are all fabricated from a material that varies in color and texture, but undoubtedly stems from a common source. The medium is basically a fossiliferous chert which ranges from a dark, highly compact variety through lighter greys and tans to a very friable brown, sandy-textured material.

In length, the blades are distributed from 44 mm. to 78 mm., with approximately 66% of the artifacts falling between the lengths of 55 mm. to 63 mm. The most common length was 59 mm. The range of width sizes varies from 22 mm. to 36 mm.; 28 mm. proved to be the prevailing width. Thickness of the blades ranged from 5 mm. to 12 mm., and the most frequent recorded was 77 mm. In overall shape the blades exhibit a slight variance. The writer refers to the general shape as ovate-trianguloid. The term pentagonal could be used in some instances, but on many of the specimens, the edges near the base are incurvate. A true trianguloid shape cannot be

applied, because many of the bases are slightly convex. The term "leaf-shaped" is avoided here as it should have been in the past. Unfortunately, the contents of many caches have been described in the vague manner.

Two smaller caches of ovate-trianguloid blades found in Marshall County were seen in private collections during the summer survey. Both were found several years ago by local collectors who did not note anything in association with these artifacts.

One of these caches were uncovered by wind erosion on Mr-5, an extensive habitation site in Union Township. This site is located on a high sand ridge that forms the south bank of the now drained Lake Manatu, and continues into Starke County as the western periphery of this once extensive body of water. On Mr-5 at the south end of the former lake, the wind has blown the fine "ginger" sand into basins and dunes exposing the usual lithic debris and artifacts. Evidently this ridge was occupied during three different time periods, for zoned-dentate stamped Middle Woodland sherds and shell-tempered Upper Mississippi sherds were recovered here during several visits to the site. The cache was found by a collector who lives in the immediate vicinity of the site. It consists of 13 ovate-trianguloid blades made of the same fossiliferous chert as those found on Mr-215. These artifacts easily fall into the size range of the Green Township blades, but on the whole they appear a little thinner and better flaked.

The other cache of 14 blades was discovered in West Township on a high sand bank overlooking the former stream bed. This ridge has also been gouged by the wind. Two concentrations of fire-cracked rocks and a few flint and chert flakes were found here during the survey. The site appears non-ceramic, but the scattered nature of the detritus warrants the conclusion that his was primarily a temporary camp site.

The collector related that the artifacts "were found in a space that you could cover with your hat." These ovate-trianguloid blades are similar in size and shape, and manufactured out of the same fossiliferous chert medium as those recovered on Mr-215. Like the specimens found in Mr-5, these blades exhibit finer flaking and are slightly thinner.

Comparisons with the ovate-trianguloid cache blades demonstrate definite cultural parallels in several early mortuary complexes of the eastern United States. At first glance, the similarity of the Marshall County blades to those found with the early Point Peninsula burial complex is striking (Ritchie, 1955, p. 60). At the Red Lake site in New York, 243 thin, trianguloid cache blades were found in association with a bundle burial and cremated remains (Ritchie, pp. 27-29). Because the most common length and width figures for the Marshall County blades were so similar to those from the Red Lake site, two typical blades were sent to Dr. Ritchie for examination. Dr. Ritchie stated by correspondence: "Although the overall shape and size of the blades could be matched within the Red Lake series, these (Marshall County specimens) are much too thick to be considered similar to early Point Peninsula mortuary blades." Concerning possible cultural affiliations for the northern Indiana specimens, Dr. Ritchie commented thusly: "I have seen blades of approximately this size, shape, and thickness from New York Middlesex sites, but I suggest that the closest similarity to your blades may be found in the Red Ochre Focus."

The Middlesex Focus of the northeastern United States shows relationships to the Adena Phase in the Ohio area, and it has now been aptly demonstrated that the Middlesex Focus suggests the eastern movement of displaced late Adena people (Ritchie and Dragoo, 1959, pp. 43-49). In turn, earlier phases of Adena seem to share many traits with the Red Ochre Focus (Webb and Snow, 1945, p. 226).

Caches of "leaf-shaped" or lanceolate blades have been found with cremations, flexed inhumations, and possible bundle burials in Red Ochre Focus mounds in Fulton County, Illinois (Cole and Deuel, 1937, pp. 57-68). Recent excavations at the Morse Site, Fulton County, Illinois, have produced 60+ blades of the ovate-trianguloid type in association with a semi-flexed Red Ochre burial (Morse, 1959, p. 198). Although no actual comparisons have been made between the Indiana cache blades and the Morse artifacts, a photograph of the latter reveals the size, shape, and color varies as do the In-

diana specimens, although the ovate type dominates in shape (Morse, 1959, p. 200). Some of these Red Ochre blades have a tendency to be more incurvate toward the base, thus differing from our Indiana blades in being more Adena-like in form.

Adena cache blades appear to be more ovate than our Marshall County blades; excurvate bases in lieu of straight ones, and blunter ends tend to differentiate these blades from the Indiana specimens. This comparison was made from a photograph of the 75 ovate blades from the Fisher site, an Adena mound in Fayette County, Kentucky (Webb and Haag, 1947b, p. 64). In **The Adena People,** Webb and Snow discuss the Adena cache blades as follows:

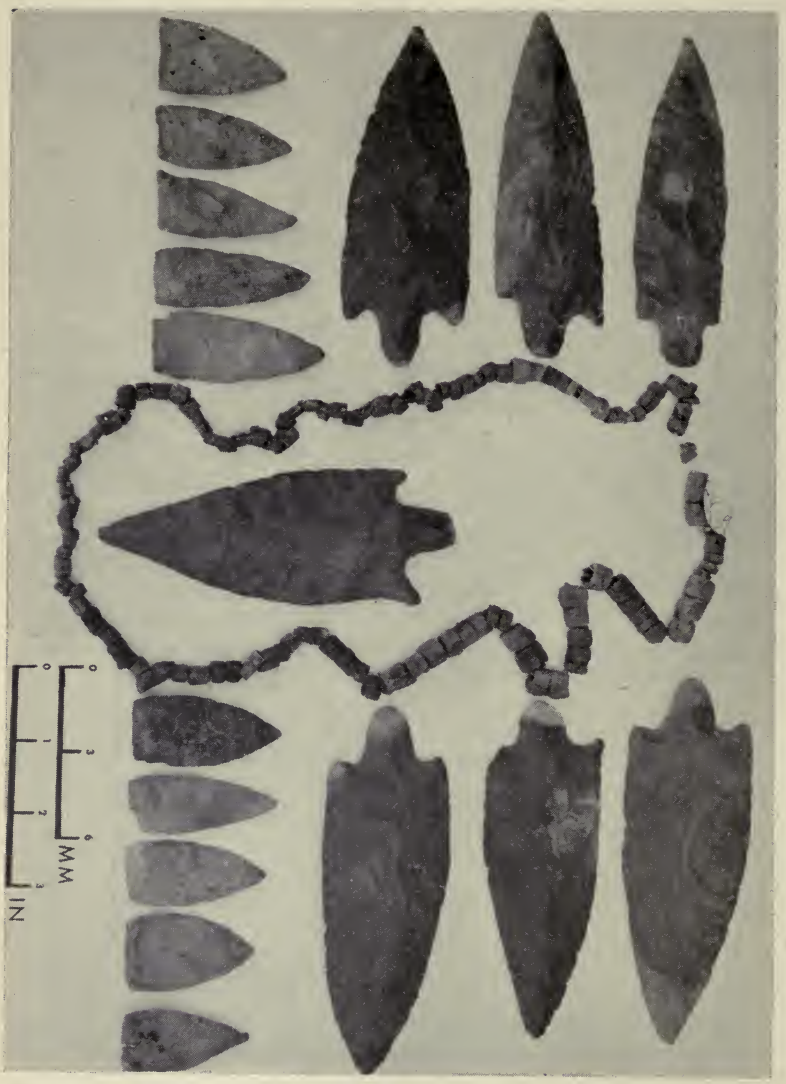
> "This has occurred with sufficient frequency to indicate some special reason for it. It may be that in some instances when these caches accompanied the dead, these flint knives were regarded as somewhat unfinished, possibly to be completed in the world of spirits, and, therefore, representing potential value, since being unspecialized they still could be made into knives, scrapers, projectile points, drills, reamers, or gravers, at pleasure." (Webb and Snow, 1945, pp. 82-83).

Since no skeletal material was reported found with these Marshall County cache deposits, the question naturally arises as to whether or not they were buried as mortuary offerings. These caches could represent a hidden store of "blanks", to be used later on the habitation site to make tools and weapons as needed. A quotation from **The Adena People** reveals:

> "While such caches are found as burial offerings, they are also found apart from burial association. Caches have been found in villages and in mounds out of association with burials, and in mounds, and under rock shelters in burial association." (Webb and Snow, 1945, p. 83)

Because of the apparent similarities between Red Ochre and early Adena (Webb and Snow, 1945, p. 226), isolated caches of ovate-trianguloid blades may be an undiscovered trait on Red Ochre-like habitation sites in other areas.

Since the recent disclosure and subsequent examination of Red Ochre-like burial offerings including a large cache of the ovate-trianguloid blades that were found more than 20 years



—Courtesy Indiana Historical Society

Fig. 2. Red Ochre-like artifacts from the Peterson site, Pulaski County, Indiana. Corner-removed or stemmed blades of Southern Indiana flint, rolled copper beads, and typical ovate-trianguloid cache blades that were found as burial offerings.

ago in a wind-swept Pulaski County, Indiana, grave, it appears more likely that the Marshall County specimens, too, were buried with the dead. The absence of skeletal material could be explained as follows. The sand ridges of northern Indiana are subject to intense wind erosion and are highly acid. Bones found in this sand are poorly preserved. The caches were found near the surface indicating an unknown amount of top soil and sand had been blown away since the ridges were initially cleared. Add years of intensive cultivation as was the case on Mr-215, and the friable human bones could be destroyed or too scattered for an untrained eye to notice.

The burial that has been mentioned throughout this report is one that links the cache blades to the Red Ochre culture. In 1938, George Peterson was cultivating a sand knoll in Tippecanoe Township, Pulaski County, Indiana, and noticed that "arrowheads" were being unearthed by the wind in a slightly eroded area. His young son started to scrape away the sand, and uncovered parts of a skelton, plus many cache blades, seven corner-removed or stemmed points or knives, and numerous rolled copper beads (fig. 2). The mandible, maxilla, and a few other copper stained bone fragments were saved for curiosity, but unfortunately they must have believed in the old adage, for the remainder of the burial was not salvaged. The mandible size indicates that was probably the burial of a male. The teeth show a moderate amount of wear. The discoverers of this burial cannot remember where most of the artifacts were located in relation to the bones except that the large stemmed blades appeared to have been arranged in a circle in the chest area. Some of the artifacts might have been slightly scattered by previous cultivation. Most of the beads were found by screening the sand.

A collector in neighboring Fulton County informed the writer of this burial, and by arduous backtracking the Petersons were located and the artifacts examined. There are 317 cache blades in the Peterson collection, but several of these articles have been given to collectors. At least 320+ artifacts were found in the cache. The blades are ovate-trianguloid, and are

made of the same fossiliferous chert as those found on the Marshall County sites. They are almost identical in size and shape to the ones found on Mr-215.

A photograph of some of the cache blades that were found on Mr-215 was sent to Dr. James B. Griffin. Dr. Griffin replied that these artifacts appeared very similar to those from the Andrews site near Saginaw, Michigan, and some found on a site in Berrien County, Michigan (personal correspondence with James B. Griffin, December, 1959). This discovery in Berrien County is undoubtedly the one Amos Green referred to in correspondence with Glenn A. Black. According to Green, artifacts dug out of a basement excavation included 438 "points and pieces" that were in four definite locations, and were probably buried in caches. Also found at this site were four broken "turkey-tails", 33 copper beads, and a copper gorget or crescent (personal correspondence between Amos R. Green and Glenn A. Black, 1958). This site has been described in the **Michigan Archaeologist,** but this publication is unavailable here for study. It is somewhat unorthodox to mention this site without studying the published report, but according to Green's description, the similarity of the artifacts found here to those recovered on the Peterson site is striking.

The Andrews site is a Glacial Kame component located in Bay County, Michigan. Birdstones were found in association with the red ochre-covered burials, but the association of the cache blades with these burials was not revealed to the writer (personal communication with James B. Griffin, and Townsend, 1959, p. 224). A published report about this important site will appear soon from the University of Michigan (personal communication with James B. Griffin, April, 1960).

The cache of seven large corner-removed or stemmed points or knives found on the Peterson site is a trait present in some Red Ochre complexes. The average length of these Pulaski County artifacts is a little over five inches, and all are made of bluish-grey Harrison County, Indiana, flint. The Middlesex Focus also utilized southern Indiana flint for the manufacture of large, double pointed knives (Ritchie, 1944, p. 195).

Four of the five "turkey-tail" blades found with Red Ochre burials in Ozaukee County, Wisconsin, are similar in shape to the blades found on the Peterson site, and are also made of southern Indiana "hornstone" as it is often called by collectors (Ritzenthaler and Niehoff, 1958, pp. 117-118). The artifact assemblage found with these early Wisconsin burials includes two other items present on the Peterson site; cache blades and rolled copper beads. Artifacts not present in the northern Indiana assemblage were a side-notched blade, a stone gorget, copper awls, and a marine shell bead (Ritzenthaler and Niehoff, 1958, pp. 117-119). Appropriately for a Red Ochre burial, a large quantity of this ochre was present with the Wisconsin inhumations (Ritzenthaler and Niehoff, 1958, p. 115), a trait seemingly absent in the Pulaski County discovery. There is a possibility that a minute amount of this "red paint" was present and was not noted by the Petersons; however, there are no ochre stains on any of the artifacts, and they do not appear to have been washed.

The rolled copper beads from the Peterson site vary in size, and are typical of the copper beads found with Red Ochre and other early burial complexes in the Great Lakes area. Many are corroded together, and the cord on which they were originally strung is still present in many of the beads. It is quite thick, and could be buckskin. Material has been preserved on the outer surface of many of the beads, and some of this appears to be a fibre, perhaps from a garment.

Before concluding this report, a burial that was found in Fulton County, Indiana, should be mentioned. This inhumation was covered by wind erosion on a sand knoll in Aubeenaubee Township, about a mile south of the Marshall-Fulton County line. Evidence of prehistoric habitation can also be found on this sandy rise adjacent to an outlet stream that flows from Lake Maxinkuckee to the Tippecanoe River.

In 1954, the landowner notified a collector from South Bend, Indiana, that bones were being unearthed by wind erosion on his farm. The collector visited the site, and exhumed this individual and the accompanying artifacts. Included among the grave goods were rolled copper beads identical to those found

on the Peterson site; a stemmed spear point; and smaller notched points. There was a possible ovate-trianguloid cache blade among the artifacts. The writer has examined the copper beads, but unfortunately, the lithic artifacts are no longer available for study. The fragmentary skeletal material was salvaged, and was donated to the writer for further examination.

The collector claims the inhumation was a bundle burial with the copper beads and stone artifacts mixed with the bones in a little pile. The writer doubts this mode of burial for the following reason. The material recovered from this grave includes a mandible, fragment of maxilla, clavicle, several ribs and thoracic vertebrae, and scapula fragments all stained green by contact with copper. These are bones that would come into contact with a necklace worn when the body was interred. If this was a bundle burial and the copper beads were mixed with the bones, other skeletal parts would surely be represented and stained by the copper carbonate salts. In all probability, this was a flexed or extended flesh burial. The bones that were not preserved by the copper were probably destroyed or not readily apparent in the highly acid sand.

An examination of this fragmentary skeleton by Dr. Georg K. Neumann revealed that these were probably the remains of a female over 27 years of age. The mandible is somewhat similar to the type found in the early Red Ochre physical type, and Dr. Neumann stated there was a good possibility that this individual was either of this entity or the early Lenid type (personal communication with Georg K. Neumann, April, 1960).

Summary

This report was not written to elucidate the temporal place of this Red Ochre-like component in northern Indiana, but was compiled to describe the recent discoveries pertaining to this early burial complex. Any suggestion of temporal relationships by the writer is merely a guess. The discovery and subsequent excavation of new Late Archaic - Early Woodland sites in the Western Great Lakes area should clarify the Red Ochre - Glacial Kame - early Point Peninsula relationships.

This nothern Indiana burial complex is similar to the Red Ochre of Illinois and Wisconsin due to the presence of the following burial offerings: cache of large blades made of southern Indiana flint; ovate-trianguloid cache blades (the amount of blades present in the caches also has parallels in the early Point Peninsula mortuary complex); and rolled copper beads.

If the Indiana physical type proves to be Red Ochre-like, a closer analogy to the western manifestations in Illinois could be maintained. There seems to be a better chance that these northern Indiana people were early Lenids, thus demonstrating closer relationships to the northern components of this early burial complex such as the Andrews site (Glacial Kame), and early Point Peninsula.

The Andrews site has not been dated by Carbon 14, but a maximum date for the occupation of this site has been postulated. This burial and habitation site is located on a beach that came into existence around 700 to 800 B. C. (personal communication with James B. Griffin, and Townsend, 1959, p. 224). How long after this time the Glacial Kame people deposited their dead here is open to speculation. The date could well correlate with Carbon 14 dates for earlier Adena sites which range from 1200 B. C. to the beginning of the Christian Era (Webb and Baby, 1947, p. 111). No radiocarbon dates have been obtained for Red Ochre thus far, but the writer would be surprised if future dates for this complex did not fall between 500 B. C. and 1,500 B. C.

The radiocarbon date for the early Point Peninsula burial complex found at Red Lake, New York (2,500 B. C. + − 260 years) (Ritchie, 1955, p. 66) seems a bit early for our western Great Lake components if they had the same temporal range as the Andrews site. A later Point Peninsula site such as Oberlander No. 2 (998 B. C. + − 170 years) (Libby, 1952, p. 77) does not reveal such a disparity of years between early Point Peninsula and the maximum date of the Andrews site. At the Oberlander No. 2 site, the cremated dead had been supplied with various artifacts including birdstones and mortuary cache blades (Ritchie, 1944, pp. 162-160).

In sum, the Indiana burial complex described in this report appears to be Red Ochre-like, although definite affiliations to Glacial Kame and early Point Peninsula have been demonstrated. Perhaps the northern components in Michigan show a closer relationship to Glacial Kame and early Point Peninsula than the ones in northern Indiana which are closer to the Red Ochre centers of influence. There are Glacial Kame traits such as the birdstone and similar tubular pipe (Cunningham, 1948) found in Marshall County, but unlike conditions at the Andrews site, the relationship of these artifacts to the northern Indiana burial complex is not exactly known. A report on the Andrews site will undoubtedly shed more light on this Red Ochre - Glacial Kame - early Point Peninsula relationship. The northern Indiana component can then be re-evaluated if necessary.

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PLAN NOW to attend THE WISCONSIN ARCHEOLOGICAL SOCIETY PICNIC to be held in conjunction with the Indian Relic Meeting on Saturday, Sept. 10th.

PLACE: At Petrie's Log Cabin Museum, Brown's Lake, East of Burlington on Highway 11, 35 miles southwest of Milwaukee.

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SEPTEMBER, 1960 Vol. 41, No. 3

RBS
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THE WISCONSIN ARCHEOLOGIST

UNIQUE DISPLAY OF SKELETON AT LIZARD STATE PARK, Lee A. Parsons ---------- 53

RADIOCARBON DATES FOR WISCONSIN ---------- 65

AN ENGRAVED MARINE SHELL GORGET IN WISCONSIN, Richard Horton ---------- 69

ANOTHER INDIAN BURIAL FROM MILWAUKEE, Lee A. Parsons ---------- 71

INTERESTING WISCONSIN SPECIMENS ---------- 74

THE COLLECTOR'S CORNER ---------- 75

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UNIQUE DISPLAY OF SKELETON AT LIZARD STATE PARK

Lee A. Parsons

During the month of August of this year the writer conducted a field excavation for the Milwaukee Museum and the Wisconsin Archeological Survey at Lizard Mound State Park near West Bend, Wisconsin. Our purpose in excavating in this effigy mound group was to attempt to make an **in situ** exhibit (Fig. 2) of a skeleton in one of the burial mounds in order to make the park more interesting as well as informative to the visitors. No professional digging has been done here in the past. The Wisconsin Conservation Department enthusiastically gave permission for this operation, and we are happy to announce that the project has been successfully completed.

Figure 2

The writer was assisted in the digging by Lyman Hintz and Robert Sturtzen, both students at the University of Wisconsin - Milwaukee. Robert Hummel, a ranger from the park headquarters of this district at Mauthe Lake, was exceedingly cooperative in providing a crew at the crucial moment for constructing an enclosure for the newly discovered skeleton.

The purpose of this paper is to publish a field report on the excavation and to describe the unique display that resulted from the field work.

We now believe the oval mound (No. 19) is not a burial mound, but only a slight natural rise in the topography. The linear mound (No. 18), which is in the northeastern section of the park, about 500 feet from the picnic grounds, is the one in which we found burials. This is located just north of the two bird effigies, and at the tail end of one of the panther effigies.

A total of nineteen days was spent in the field. Of this time, about eight days were expended on mounds which yielded nothing but occasional flint chips, and eleven days on the mound which enventually yielded undisturbed features. These consisted of one adult (Fig. 1) and one infant skelton and a ceremonial fireplace or altar. It is possible that the unproductive mounds had been opened in the past by amateurs. We know that most of the mounds in the park showed depressions or pits in vital spots when the Conservation Department restored the mounds around 1950 prior to opening the State Park. We trenched five mounds in August — a panther effigy, a tapering linear, a low conical, an oval, and a linear. There are some thirty mounds extant in the group, about half of which are animal effigies.

Reference should be made at the outset to the 1941 survey of this mound group for the Archeological Society by Kermit Freckman. The results of this survey were published in this journal in 1942 (Vol. 23, No. 1) under the title of, "The Hagner Indian Mounds." I shall refer to mounds by the numbering system used in that report.

At this point let me briefly describe our excavation techniqnes as well as make some general observations. All mounds

Figure 1

were trenched down their longitudinal axes. We dug through the fill of the mounds fairly rapidly by use of mattocks and shovels without screening. Trench profiles were always carefully examined for discoloration that might indicate pits either of previous explorers or of original burials.

Our trenches were two and a half feet wide and lined up on the center axis. By test pitting in the woods outside of the mounds, we discovered a natural red clay and gravel layer from one to two feet below the topsoil, depending upon the section of the mound group concerned. This compact layer was also encountered at the base of all the mounds. Therefore our trenches were always dug at least to this level. The red clay in each case was found at the same relative depth inside and outside any mound. We assumed that if undisturbed, this was certainly a sterile layer.

One of the more interesting questions raised by our work was the determination of the actual base of any mound. In each burial mound the original humus line could be clearly followed at the approximate level of the present ground surface outside the mounds. One might assume that if this line is uninterrupted the full length of a mound, that this is the true base of that mound. In such a situation any mound features would have to be above that line. Where interruptions occur along the humus line, one must assume that the Indians removed the topsoil at that place either as a preparatory technique for mound construction or for the purpose of interring a body below the ground surface.

From our sample of these mounds it can be said that the mound builders in this locality generally heaped up earth on top of the ground without first removing the topsoil — a practice noted in many other mound groups in the state. It is, of course, known that these prehistoric Indians often did remove all of the topsoil within the outline of a future burial mound as a variant technique. However, in our excavations, we found evidence of differential removal of topsoil within single mounds. In other words, the sod was stripped in one portion of a mound, but not in another. As far as the author knows, this technique has not been previously reported, except for

instances where the ground surface was broken for the placement of sub-mound burials. In the panther effigy we have some evidence that the original topsoil may have been removed around the perimeter of the mound only, and in the tapering linear mound the "head end" only was so prepared. Could some Indian medicine man have first laid out the essential shape of the proposed effigy by scraping out its outline in the earth? Then could "uninitiated" men or women have taken over the common labor required to actually carry earth to the site? This "outline impression" theory will have to be verified by checking in other mounds.

Finally, it should be noted that the earth used in these mounds was borrowed from the immediate vicinity. Comparison of handfuls of subsoil from the adjacent woods with handfuls of mound fill showed near identity of soil type in both localities. This soil may be described as reddish-brown sandy loam.

We began work on August 1, with a panther effigy (No. 36 in the Hagner Mound survey) located in about the geographical center of the mound group. We spent four hopeful days on this mound. The panther is roughly 200 feet long, including tail, and 25 feet wide at the level of the front leg. It rises two and a half feet above the general ground level. In regard to this mound, Freckmann reported ". . . a pit near the shoulder probably caused by the falling of a tree." It was otherwise in good condition at the time.

Some interesting soil features and conclusions therefrom were obtained from this effigy mound. We trenched the whole body portion of the panther (about 30 feet), from the front of the head to the beginning of the tail. We dug down to the top of the red clay and gravel layer which was about eight inches below the present ground level in this locality. We could clearly determine the exact extent that the Conservation Department had restored the head end of the panther because of the presence of a second humus line about six inches below the present surface. This original humus line also revealed Freckmann's "fallen tree" depression, located directly behind the front leg. At the base of the mound was another thin dark

layer representing the old ground surface over which the mound had been built. There were two significant interruptions in this feature. First, this humus line disappeared about four feet from the front of the head, leaving a gap which, as suggested above, may indicate that these mound builders had outlined the panther on the ground by removing this topsoil. It is important in this regard that flint chips were found in the trench in this area just above the red clay base layer, suggesting that the Indians also had dug that deep here. The second discontinuity in the old humus line occurs directly below the above mentioned surface depression behind the front leg. The curved outline of the bottom of a pit was easily seen below the old humus line. The soil within the outline was exceedingly compact. If it were not for the surface depression, we might assume that this was an undisturbed burial pit. As it stands, however, this is probably the base of a hole dug by recent looters. We probably will never know whether or not they found anything. There certainly was nothing there when we got there.

The next three days of field work were devoted to the tapering linear mound (No. 24) and a low conical mound (No. 25), both in the northeastern section of the park. The conical has a maximum diameter of twelve feet and a height of slightly under a foot. A six foot square was removed in the center down to the red clay layer. Nothing was found. It might be supposed that if this mound ever contained a burial, it had been removed at some earlier date.

Though the tapering linear mound also showed no burial in our centrally oriented trench, another interesting feature was noted. Our trench extended from the front of the wider and higher end almost to the middle of this 85 foot mound. The maximum width and height of the mound is 12.5 feet, and 1.7 feet, respectively. In this mound we excavated a couple of inches below the top of the red clay and gravel layer which was in turn about seven inches below the present ground surface in this area. In the front sixteen feet of the mound, the consistency of the fill was homogenous from the surface sod all the way to the top of the red clay. No previous humus

line was evident in this part of the mound. But a humus line did come into view sixteen feet from the front of the mound and continued to the end of our trench. In other words, it seems that the prehistoric Indians had removed sod in the higher and wider portion of the mound only. The "tail" of this mound was constructed above the old ground level.

They took the trouble to strip the top seven inches in the front of the mound, but for what purpose? Is it possible that there once was a burial here, or even that we missed one that is still there if it is placed very much off center. No discoloration was seen in the surface of the red clay that might indicate a sub-mound burial pit.

We feel that we have established that the small "pointed oval" mound (No. 19) is a natural rise in the ground surface. Our evidence is negative in that the usual burial mound features were absent. On the positive side, the soil profile inside the "mound" is identical to that in a test pit four feet outside of the mound. The red clay and gravel layer is two feet below the surface outside, and 2.35 feet inside. This mound actually is only four or five inches higher than the general ground level. There was no old humus line and no flint chips. It is further interesting to note that in an original survey of this mound group in 1883 this oval mound was not reported. Freckmann says it was "overlooked" in the earlier report.

Our final mound (linear mound No. 18) was begun on Friday, August 12th. The following Wednesday morning we found the first burial. Kermit Freckmann says (**ibid,** page 11, "This mound is connected with Mound No. 16 and extends N. 65° W. It is 47 feet in length and 21.5 feet wide. It stands 4 feet high and is in good condition." Our measurements fell slightly short of the above in length and height and four feet less on the width. This mound is about 400 feet N. 30° E. from the heart of the Lizard Mound.

Our crew dug a thirty foot trench down the long axis, beginning about eight feet inward from each end. This trench eventually attained a depth of about six feet from the top of the mound. By Tuesday night we had dug to a depth of about six inches below the original ground surface. On first exam-

ination, the old humus line seemed to be continuous the full length of the mound on both trench profiles. Therefore it seemed that there was no point in digging deeper, as we had found no burial above the old ground surface and we had no real evidence that there could be anything below. There certainly was no change in soil color on the floor of the trench which one might expect if there were a sub-mound burial pit. However, there were a couple of suspicious places where the humus line was vague or actually discontinuous (Fig. 3). Therefore, the next morning I resolved to dig a little deeper in these places prior to filling in the trench and starting another mound. That morning my fifth shovelful of dirt exposed a heavy section of human long bone that turned out to be from an adult human femur. At this point the work slowed down to a lengthy process of clearing a sufficient space to comfortably uncover the skeleton.

We decided it would be worthwhile also to dig the whole trench down to the level of the red clay. During this operation a second fragment of human bone was discovered by Sturtzen. This was a piece of a very small temporal bone from the side of a skull. It turned out that this was the remains of an infant less than one year old. Only the left portion of the skull and mandible were present along with a bit of shoulder blade and shafts of several long bones. These were removed because of their fragmentary preservation. This burial was just 8.5 feet west of the center of the adult skeleton. It also faced the other skeleton and was at approximately the same depth. Above this skeleton we noted no break in the humus line and no discoloration of the soil. Also just to the west are three very distinct hemispherical impressions in the profile (Fig. 3) which may represent basket loads of earth as they were heaped upside down on the old ground surface to build the mound. There were a number of other similar dark wavy lines in the south face of the trench, but these were much more value. They also may represent basket loads.

The third major feature was a ceremonial fireplace, or altar, located 5.5 feet west of the infant (Fig. 3). The two burials and the altar are lined up in a straight line. This might

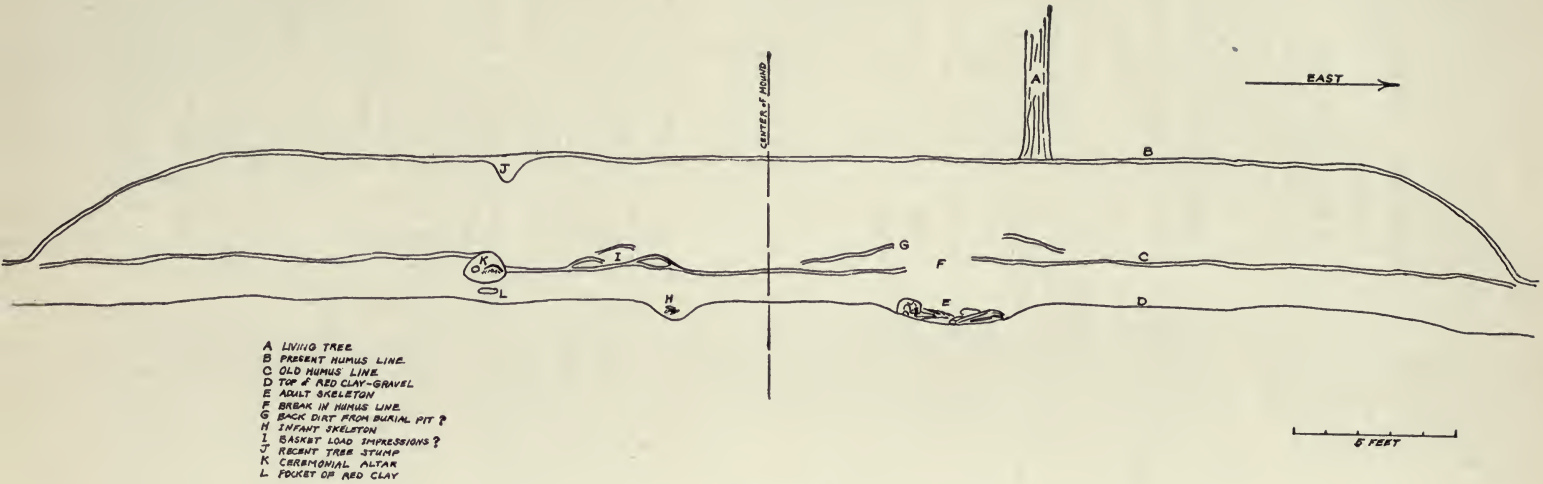
CENTER of MOUND
EAST
A
B
C
D
E
F
G
H
I
J
K
L
6 FEET
A LIVING TREE
B PRESENT HUMUS LINE
C OLD HUMUS LINE
D TOP of RED CLAY-GRAVEL
E ADULT SKELETON
F BREAK IN HUMUS LINE
G BACK DIRT FROM BURIAL PIT ?
H INFANT SKELETON
I BASKET LOAD IMPRESSIONS ?
J RECENT TREE STUMP
K CEREMONIAL ALTAR
L POCKET OF RED CLAY

Figure 3

indicate contemporaneity of the features. However, they are not quite oriented in the same direction as the whole mound itself; they lie about 5° farther to the west. The altar is positioned on the old ground surface at a point where there is a step-down in the humus level. The compact soil within the altar area is a light gray. Specks of charcoal occurred at a level with the bottom of the humus line and over this burned portion is a thin dome of pure kaolin. Another fist-sized lump of this clay was located just to the west.

It was only the adult burial towards the east end of the mound that we prepared for exhibition to the public (Fig. 1). After its discovery, closer examination revealed a slight staining of the soil just above the skeleton. This appeared as an irregular reddish outline delimiting the area of the burial. The soil within and without this line was the same compact sandy consistency and the same yellowish hue. Another detail that was overlooked at first is feature G on Figure 3. These two curved sections of darker soil may outline the surface of piles of black dirt that were thrown out of the pit before the skeleton was interred. They had dug about a one and a half foot grave before constructing the mound over it.

While Conservation Department workmen were constructing a wooden form for a concrete enclosure for the burial we cleared an entrance passage in the south side of the mound and dug a trench for a concrete footing. We then carefully exposed the skeleton with grapefruit knives, paint brushes, dental tools, and patience. This operation alone took two full days. The bones were fairly well preserved, though many of the smaller long bones were spongy and difficult to clean without removing some of the bone surface.

This individual turned out to be a rugged female between 21 and 35 years of age. She was buried on her right side, facing south, and in a flexed position. She takes up only three feet from the top of her head to the tip of her toes. Her left hand is brought up to her face, and her right is under her chin. All bones are articulated and intact. Even the lower teeth are occluded with the upper. A more beautiful effigy Mound Culture burial hardly could be expected (Fig 1).

One can only guess whether or not she was the mother of the infant in this mound, whether they died at the same time, or whether their deaths were from related causes. The only clue to such questions is that they were probably buried at the same time.

Other general observations relative to this skeleton are listed below. More detailed measurements could not be made as we did not wish to dislodge any of the bones. We felt that the public should see the burial exactly as it was found, so the bones were cleared just enough to provide a clear view of the skeleton. The remaining dirt holds the bones in place. We did cover the exposed bones with three cans of Krylon clear plastic spray so that they would be preserved from air and moisture and further deterioration.

This young Indian woman probably had a living stature of 5 feet, 1 inch. She had a good set of teeth, though badly worn. The boney gums protrude about the teeth. She shows slight flattening in the lambdoid region of the back of the head, possibly due to cradling practices. We estimate that her cranial index (skull width divided by skull length) is about 70. This indicates dolichocephaly (long headedness).

All steps in the uncovering of features in this burial mound were thoroughly recorded on paper and on film. Six rolls of 620 black and white films were taken, along with flash-exposed 35 mm. color transparencies. Two hundred feet of 16 mm. color film were taken which will result in about a seven minute movie showing the excavation of the skeleton and the building of the special enclosure.

By way of example of the excellent timing which blessed this project, I wish to point out that the skeleton was given its last cleaning at one o'clock on Friday, August 26. At one-thirty the same afternoon, while the author was taking the final photographs, a crew from the Conservation Department arrived with the completed wooden form. (This had been prefabricated at the carpenter shop at Mauthe Lake.) The concrete footing had been poured earlier that week, before the skeleton had been uncovered any further than the leg bones and the side of the skull. Therefore, the form could be lowered

into place immediately and secured before the end of the afternoon. This protected the skeleton from vandalism over the week-end. Actually, the previous two nights one of the students even had slept near the skeleton for security reasons during its vulnerable period. The construction crew worked overtime on Saturday, and all day Monday to finish preparations for pouring the rather complex structure. This event took place Tuesday morning. Then on Thursday, September 1, the form was removed and a special 48" x 30" by ½" Plexiglas viewing window was installed. Prior to this the skeleton had been protected by a heavy platform directly over the bones, as well as a plywood panel which was screwed over the opening where the window would be. The mound was filled in and landscaped immediately, and by Friday the place looked as though it had always been that way. The State Conservation Department deserves much credit for carrying through their part in this project with promptness and efficiency.

The resulting enclosure and exhibit is both pleasing and exciting (Fig. 2). The visitor can now walk into the mound at ground level and peer down into the bowels of the mound at the skeleton that lies below his feet.

Structurally, the enclosure should protect the exhibit for years. The Plexiglas, which was installed out of expediency at this time, may have to be replaced with tempered glass because of scratching or clouding, but it is virtually unbreakable. The frame is specially designed to be removable only by park personnel with special equipment. The one factor which may be a problem under differing conditions of humidity and temperature is the fogging up of the inside of the glass due to moisture condensation. At the outset there was fogging, probably due to moisture from the drying concrete. We did leave two air vents (with heavy screening), one near the top and behind, and one near the bottom and in front. For most conditions this would serve to keep the glass free from condensation.

Our plans for making an in situ exhibit at Lizard Mound State Park were by way of an experiment. This sort of thing has been tried with varying success at several parks in south-

eastern states. We hope we have more luck with our attempt. The exhibit was completed in time for the Labor Day weekend, and visitors to the park at that time were the first to see this unique display. A permanent park sign will be carved this winter with a legend giving the pertinent information. This will be ready for next year's season. It will be interesting to observe how long and how well this outdoor exhibit serves the public.

RADIOCARBON DATES FOR WISCONSIN

Your editor thought it might be useful to bring together all the radiocarbon dates published on Wisconsin prehistoric cultures. The dates, culture, type of sample, comments, and pubtication source are included here with the idea that it would be of ready reference use to the members of the Wisconsin Archeological Society.

OLD COPPER CULTURE

"Our No. Sample Age (years ago)

C-836 Old Copper, Oconto, Wisconsin (Old Copper I): 5600 + – 400

Charred wood from the Old Copper culture site near Oconto, Wisconsin. The samples were directly associated with Archaic burials. The Old Copper Culture has never been accurately dated. Charred wood from Area II, Feature 1 from Crematorium. Submitted by Robert E. Ritzenthaler, Associate Curator of Anthropology, Milwaukee Public Museum, Milwaukee." (Libby, p. 33)

C-837 and C-839 Old Copper, Oconto, Wisconsin (Old Copper II): 7510 + – 340

Charred wood from Feature 3 constitutes sample 5-837, Area 1, and charcoal from Feature 11, Area I, constitutes Sample C-839. 12 gms of No. C-837 and 8 gms of No. C-839 were mixed and measured. Submitted by Robert E. Ritzenthaler, Milwaukee Public Museum, Milwaukee." (Libby, pp. 33-34)

"M-643. Osceola Site, Wisconsin 3450 + – 250

Human bone from the Osceola Site (42° 39' Lat, 90° 41' 30" W Long), Grant County, Wisconsin. The burial layer from which the sample was collected was from 2.5 to 5 ft. below the ground surface. Between the burial layer and the topsoil was a layer containing isolated fragments of late Woodland pottery and broken chert points. Coll. 1945 and subm. by Robert Ritzenthaler, Milwaukee Public Museum, who has published a report on this site (1957). **Comment:** see below (M-644)." (Flint and Deevey, p. 182)

"M-644. Reigh Site, Wisconsin 3660 + – 250

Human bone from the Reigh Site (44° 03' N Lat, 88° 38' W Long), Winnebago County, Wisconsin. The burials from which the sample was obtained were in a gravel layer with no stratigraphy. The burials varied in depth from 1.5 to 5 ft, but the actual depth is unknown since the top surface level was removed by earth-moving machinery. Coll. 1956 by Neil Ostberg; subm. by Robert Ritzenthaler, Milwaukee Public Museum, Milwaukee, Wisconsin, who has published a report on this site (1957). **Comment:** The Osceola Site above (M-643) represents Old Copper culture. Ritzenthaler interprets the Reigh Site as a Glacial Kame culture, but the associated artifacts show it to be a mixture of Old Copper and Glacial Kame. Sample from other Old Copper culture sites have been dated: Riverside Cemetery, Menominee County, Michigan (M-658, 3040 + – 300, Michigan III); Isle Royal copper mines, Keewenaw County, Michigan (M-320, 3000 + – 350, and M-371E, 3800 + – 500, Michigan I). These dates, in conjunction with those for the Osceola and Reight sites, suggest that the earlier Old Copper samples from Oconto Cemetery, Wisconsin dated by the Chicago Laboratory (C-836, 5600 + – 600, and C-837 and C-839 combined, 7510 + –600, Chicago V) are much too early." (Flint and Deevey, p. 182)

MIDDLE ARCHAIC

"M-784. Raddatz Rockshelter, Wisconsin 1380 + – 200

Charred wood from the Raddatz Rockshelter (43° 21' N Lat, 89° 56' W Long), Sauk County, Wisconsin. The sample

was taken from a firebed in level 6 (20 to 24 in. below surface. Two large side-notched projectile points were found in this firebed. These and other associated materials from elsewhere in the shelter at the same depth are typologically Middle Archaic. Coll. 1957 and subm. by W. L. Wittry who has a final report on the site scheduled for publication in the Wisconsin Archeologist during 1959. **Comment:** the artifacts associated with this sample, being of Middle Archaic type, suggest a date much earlier than the 1380 + − 200 given. See Michigan I, II, III for other radiocarbon dates for archaic materials." (Flint and Deevey, p. 178)

UPPER MISSISSIPPI CULTURE

"Carcajou Point series, Wisconsin

Charcoal associated with artifacts from Carcajou Point (42° 53' 21" N. Lat, 88° 57' W Long) and Carcajou Point Village (42° 53' 22" N Lat, 88° 57' 30" W Long), Lake Koshkonong, Jefferson County, Wisconsin. The artifacts are typologically primarily Upper Mississippi with some evidence of continuity from Middle Mississippi traits. Archaelogical problems of the area and previous radiocarbon dates are discussed by Hall (1958, and ms.). Coll. 1957 and subm. by R. L. Hall, Lincoln-Tallman Historical Museum, Janesville, Wisconsin." (Flint and Deevey, p. 178)

"M-786. Carcajou Point Village 960 + − 250

Charcoal recovered from the general fill of a refuse pit (feature 41) within the area enclosed by the outline of a house of wall trench construction (feature 61). Pottery associated with this sample is regarded typologically as representing an early phase of an occupation Upper Mississippi in total character, but marked by attenuated Middle Mississippi traits in ceramics and house construction." (Flint and Deevey, p. 178)

"M-785. Carcajou Point Village 930 + − 250

Charcoal from the fill of a post mold 1 ft. in diameter (feature 57) centered exactly within the outline of the house (see above − feature 61). The date determined for this sample differs from that for M-786 by only 30 yr. As both samples

are from features (41 and 57) within the same house outlines (feature 61), all three features would appear to be essentially contemporaneous." (Flint and Deevey, p. 178)

"M-642. Aztalan Site, Wisconsin 320 + — 200

Charcoal from the charnel house (crematorium) 2.3 ft in depth in stage C (top level) of northwest pyramidal mound, Aztalan Site (43° N Lat, 88° 55' W Long), Jefferson County, Wisconsin. The excavation of this feature is described in Rowe (1958). Coll. by C. W. Rowe in the summer of 1954; subm. by Robert Ritzenthaler, Milwaukee Public Museum, Wisconsin. **Comment:** this date is believed to be too late for the Aztalan occupation." (Flint and Deevey, p. 179)

EFFIGY MOUND CULTURE

Wakanda Mound Group, Menominee, Wisconsin

"The charred wood sample (M-814) from mound 16 was processed at the University of Michigan Memorial-Phoenix Project laboratory, Prof. J. R. Crane, Director. The date is 750 + — 200 years ago, or 1208 A. D. + — 200 years (James B. Griffin, personal correspondence, 1959." (Wittry, 1959. p. 112)

Kolterman Mound Group

"The date was obtained from charred wood found in a cremation in Mound 18 (otter effigy) of the group on the August Kolterman farm in Dodge County. Salvage excavations by a joint party from the State Historical Society, Milwaukee Public Museum, and Wisconsin Archeological Society were conducted at this site in 1954 when highway remodeling threatened to destroy several of the mounds. The results of this work have been reported in a recent issue of this Journal (Wittry and Bruder).

The date is 1,180 + — 250 years ago, or 776 A. D. The 250 year leeway provides a reasonable degree of certainty that the age falls within the period 526-1026 A. D. We are indebted to Dr. H. R. Crane of the University of Michigan Memorial-Phoenix Project, Radiocarbon Laboratory for the dating of the sample (number M-398)." (Wittry, 1956)

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AN ENGRAVED MARINE SHELL GORGET IN WISCONSIN

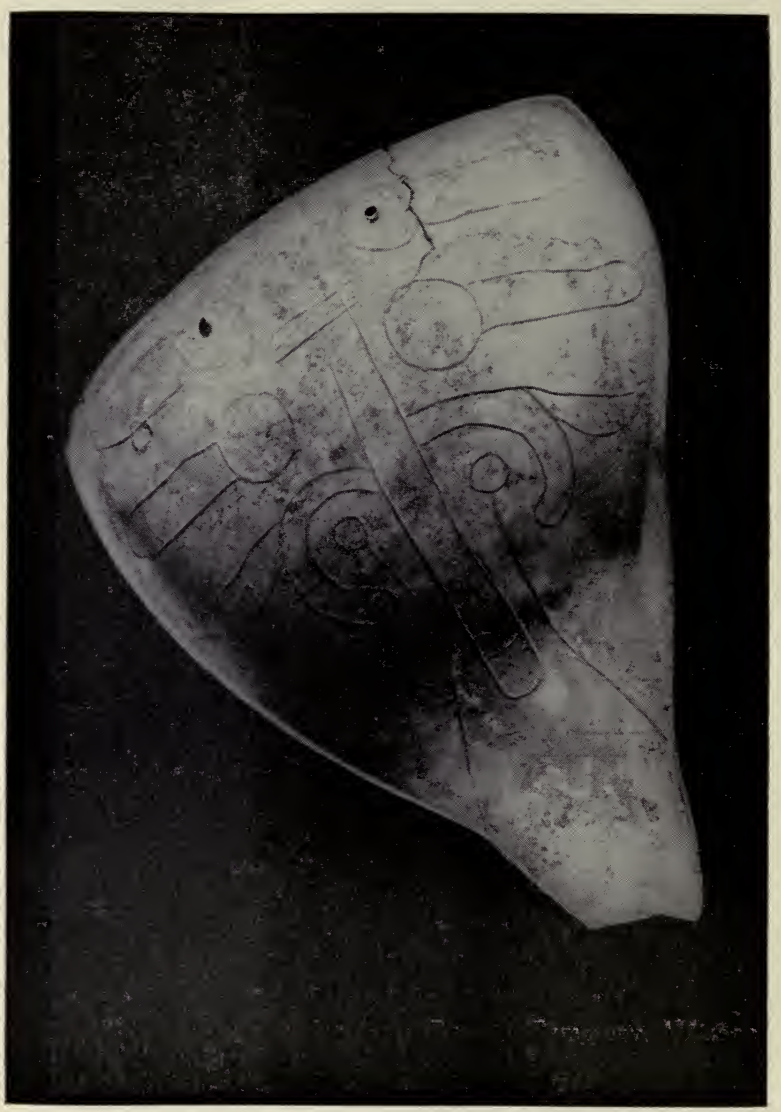
By Richard Horton

Among other objects of archeological interest now on exhibit at the Oshkosh Public Museum, perhaps the most interesting and unusual is a highly engraved gorget, made from a portion of the species Busycon perversus (?), an Atlantic Coast marine whelk. The greatest length of the gorget is 7½". The greatest width is 5-5/16". The thickness is 5/16". The weight is 7½ oz. Near the top of the gorget are two small perforations. These measure ½" from the top edge and are 1¾" apart.

The specimen was found in 1901, by a group of children, while playing in a gravel pit, near their school. The gravel pit is located in the NW. ¼ of the NE. ¼ of section 20, Taycheedah Township, Fond du Lac County.

This unusual specimen is the only known example of an engraved shell gorget for Wisconsin. The meaning or symbolism of the engraved designs is unknown. The design was cut into the surface of the shell with a sharp tool, and the grooves were filled afterwards with black pigment. It was probably worn on the breast as a gorget, suspended from a cord, which passed through the holes drilled at the top.

Marine shells occur along the shores of the South Atlantic Coast states and the Gulf of Mexico. They were probably



brought to Wisconsin during the course of aboriginal trade or other relations with tribes inhabiting these or other regions lying between the coast tribes and our own. They were undoubtedly very highly prized by their owners here in Wisconsin.

This specimen is probably the product of people of the Mississippi culture. Their cultural relatives to the south produced more elaborate and beautiful shell engraving; those recovered from the famed Spiro Mound in Eastern Oklahoma being especially artistic. The engraved shells and shell gorgets at Spiro represent a time period estimated at 1100 to 1300 A. D.

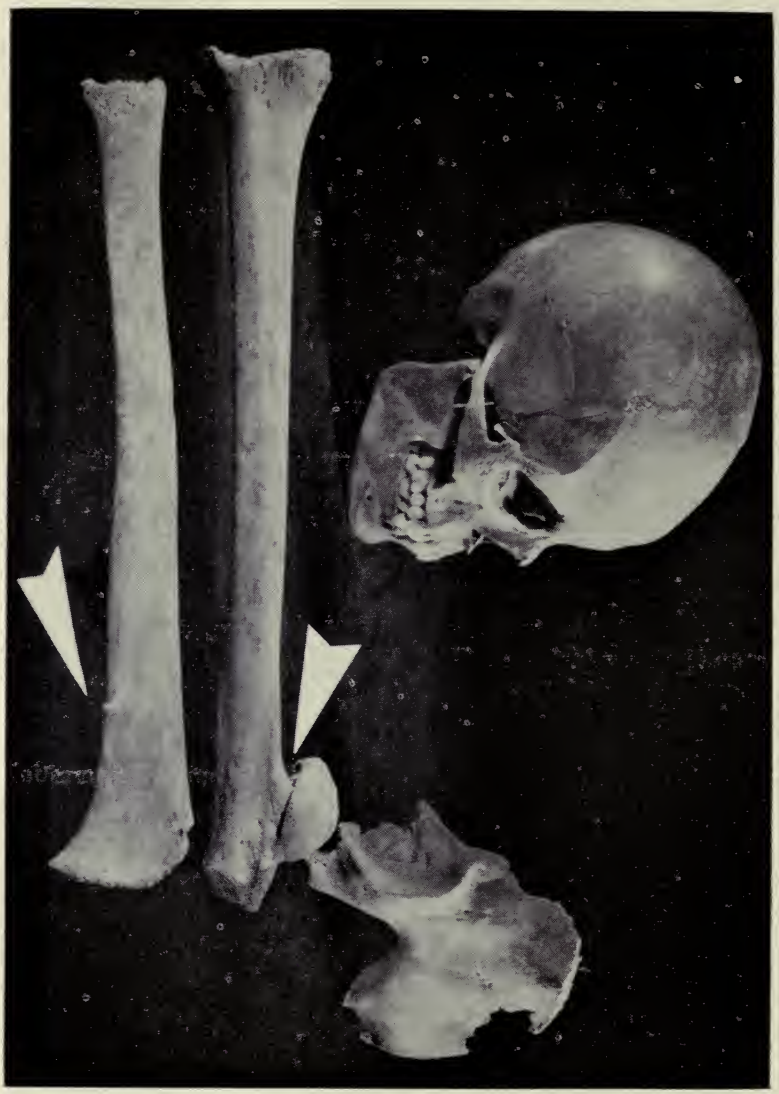
ANOTHER INDIAN BURIAL FROM MILWAUKEE

Lee A. Parsons

The September, 1958, issue of the **Wisconsin Archeologist** contained a report by Dr. Robert Ritzenthaler of a mat-wrapped burial that accidentally came to light in gravel pit excavations in Milwaukee County. This was on 104th St. and just north of the Watertown Plank Road on the grounds of the Milwaukee County Institutions. On June 2, of this year, a second burial was discovered by a steam shovel operator within about twenty feet of the find of two years ago. This time, fortunately, the crew stopped work immediately when the first few bones appeared and called the Wauwatosa Police Department, who then called the museum.

Dr. Ritzenthaler and myself went out that afternoon and found that about half of the burial had been exposed. In the vertical face of the newly excavated embankment was the outline of a prehistoric pit with bones protruding from the bottom. The dark-colored humus of the fill in the pit contrasted sharply with the surrounding gravel. The bottom of the pit was only 3.5 feet from the present ground surface and the pit was a maximum of 3.6 feet wide.

Whereas the neighboring burial had yielded copper beads in association with a single female skeleton, no artifacts were forthcoming from this. This burial seems to have been a single interment also, though three bones (a humerus, ulna,



and piece of a skull vault) included in the fill belonged to a second individual, probably a youngster. The main skeleton is female and about sixteen years of age. She was buried in a tightly flexed position on her back. And the epiphyses (the growth area between the cap and the shaft) of the long bones were unfused. Most of these caps were entirely separated from their shafts when excavated. The third molars were present in the jaws, but presumably were not quite erupted. This individual was exceedingly round headed, or brachycephalic. While a cranial index (head breath x 100 divided by head length) of 80 indicates round-headedness, her cranial index is 86.6. Other pronounced features of the skull are a marked bulging of the parietal bones at the sides of the skull, a keeled vault and prognathism in the tooth region.

Several pathological features are of considerable interest on this skeleton. First of all, there are four instances of dental caries, three of which are rather severe. An even more unusual condition is evident in the left thigh bone, or femur. The head of the femur which articulates with the acetabular fossa of the pelvis is attached directly to the shaft of the femur, rather than being separated from the shaft by a short neck such as is found on a normal femur. This seems to be a congenital defect, rather than the result of a fracture. The acetabular fossa is also misshapen. The living Indian must have experienced limited maneuverability of the left leg and some shortening of the limb as well, as a result of this displacement.

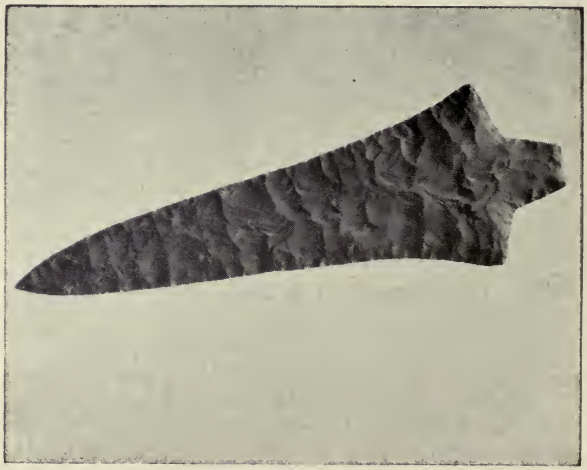
An interesting compensating mechanism was observed on the right shin bone of the same skeleton. There is an anomalous bony protuberance on the upper left side of this bone. It is known that such appendages may develop during the lifetime of an individual to provide attachment for extra-heavy musculature. In this case we therefore have evidence that the girl developed strong muscles in the lower right leg in response to the limited usefulness of the left leg.

Because of the absence of artifacts with the burial, it is difficult to assign it to a particular culture group. Pit burials of this type, however, are known for the late Archaic time period. It is also significant in this regard that the burial some twenty feet away had contained tubular copper beads.

Interesting Wisconsin Specimens

PIPE

Found by Robert Hruska with cremated burial at Chappie Rapids, 3 miles upriver from Menominee. It is the calumet type of catlinite the color of which has been faded by fire and partially covered with an encrustation of fused glass. From the Hruska collection.



CHERT BLADE

Beautifully chipped and shaped. Length 8-3/16 inches. Surface find near Portage, Wisconsin. Harold Hempel collection.

Archeologist JOAN FREEMAN was recently appointed Research Associate in Anthropology at the State Historical Museum at Madison.

One of our pioneer members, Mr. GEORGE FOX, was honored by the Michigan Archeological Society. He received the "Award of Merit" plaque.

Summer archeological field projects included excavations by the State Highway Salvage crews in Crawford County near Boscobel, a Neville Museum (Green Bay) dig on Chambers Island, and the Milwaukee Public Museum dig at Lizard Mound State Park. Reports on these projects will appear in the Wisconsin Archeologist beginning with this issue which covers the Lizard Mound excavation.

There was a good turnout of members for the annual collector's meeting at Petrie's cabin on Browns Lake on September 10th.

The following New Members are welcomed into the Society.

Charles Hoepner, 241 Henninger Street, Mayville, Wis.
John Doerflinger, 2028 Franklin Ave., Middleton, Wis.
William J. T. Brown, 406 Pearl St., South Haven, Mich.
S. S. Rider, Hart, Michigan.
George Richards, 1719 Birney St., Saginaw, Michigan.
Inez M. Richards, 1719 Birney St., Saginaw, Michigan.
Richard Derrickson, R. 3, Boscobel, Wis.
Earl G. Skagen, R. 3, Box 445, Burlington, Wis.
Paul Medow, 400 W. 61st St., Clerendon Hills, Ill.
Harold Lundell, 352 N. Green St., New Richmond, Wis.
Harold Orloske, 2133 Bush, St. Paul 19, Minn.
Frank Bubser, Box 316, Roscoe, Ill.
Robert Koeppler, Lakewood Club, Muskegon, Mich.
Mark Stock, R. 2, Jefferson, Wis.
Stephen H. Garrett, 1606 Fremont Ave., St. Paul 16, Minn.
Donald V. Peru, 543 Glenwood, S. E., Grand Rapids, Mich.

James Weida, 711 N. 16th St., Apt. 807, Milwaukee 3, Wis.
Roderick A. Waller, 615 St. Joseph St., South Haven, Mich.
Harold W. Moll, 1755 E. Isabella Road, Midland, Mich.
George C. Johnson, 526 E. Howard St., Portage, Wis.
William T. Zuehlke, 3815 A. N. 40th St., Milwaukee, Wis.
Marvin E. Mueller, 421 E. North St., Jefferson, Wis.

COMMITTEES

ARCHEOLOGICAL CONSERVATION: Dr. David A. Baerreis, Chairman. Edwin Goke, Paul Scholz, Dr. Chandler Rowe, Laurence Kracht.

MEMBERSHIP: Phillip H. Wiegand, Chairman. Herman Zander.

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THE WISCONSIN ARCHEOLOGIST

A CHIPPEWA MIDE PRIEST'S DESCRIPTION OF THE MEDICINE DANCE, Victor Barnouw 77

THE HANSON PETROGLYPHS, VERNON COUNTY WISCONSIN, A Dewey Buck, Jr. and William H. Wilson 98

LAPHAM MEDAL AWARD 102

WISCONSIN LAWS PERTAINING TO ARCHEOLOGY 103

BOOK REVIEWS 105

NEW MEMBERS 107

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A CHIPPEWA MIDE PRIEST'S DESCRIPTION OF THE MEDICINE DANCE

Victor Barnouw

The Medicine Dance or Midewiwin was a religious ceremony of the Chippewa (or Ojibwa) Indians which is now rapidly vanishing. Although the Canadian Chippewa are, in general, less acculturated than those of the United States, the Midewiwin has disappeared north of the Great Lakes, but it is still followed by a small minority on some United States Chippewa reservations.

In the summer of 1944 I did field work at Lac du Flambeau, where my principal informant was an elderly Mide priest. Autobiographical data from this man appeared in the **Wisconsin Archeologist,** Dec. 1954, "Reminiscences of a Mide Priest." During my summer's work I asked the old man if he would describe to me the preparations that a person makes in joining the Midewiwin, as well as the ritual activities that take place during the Medicine Dance. He complied; the following pages represent his account.

Readers interested in this American Indian ceremony should consult the classical work on the subject: W. J. Hoffman, "The Midewiwin, or 'Grand Medicine Society' of the Ojibwa. 7th Annual Report, Bureau of American Ethnology, 1891. For an account of the origin legend about Wenebojo, told at the Medicine Dance, as narrated by the same Mide priest, see Victor Barnouw, "A Psychological Interpretation of a Chippewa Origin Legend," **Journal of American Folklore,** Part I: Vol. 68, No. 267, Jan.-March, 1955, pp. 73-87; Part II: No. 268, April-June, 1955, pp. 211-223; Part III, No. 269, July-Sept., 1955, pp. 341-355.

The account follows, largely in the words of the Mide priest:

People who are going to join the Midewiwin cook food; this is the first thing they do. After that, they put the food on the floor for the person who is going to join the Midewiwin. There will be some goods, a blanket or anything that the person has. Goods or blankets about three feet high must be piled up there. Then there's a pail there too. There may be other pails; but there's one that's higher than the others. If anybody wants to part with a gun, that's all right. You can use that instead of a galvanized pail; but nothing old. I got a new rifle at the Midewiwin last spring. Everything has to be new.

After a person has decided to join, he thinks about a person who will come and do the work that he wants him to do. They call this person. He comes to the house of the person who wants to join, who is called the **wamidewit**. The person whom the **wamidewit** calls is called the **wedunikamaget**, the speaker, "the man who speaks for another."

He goes to the **wamidewit**'s house and the **wamidewit** tells him what he's going to do and fills up his pipe for him. The speaker has to be a man and a Mide priest. He's supposed to have a dish of his own, which he brings with him. The **wamidewit** fills up his dish with food. The speaker also has to bring a runner (**Skabewis**) with him. The **wamidewit** fills up his pipe and bowl too. The two men sit with their food before them, but they don't eat for a while. They talk and smoke. The speaker and his runner have to empty their pipes. They have to smoke all of their tobacco first. The reason why they do that is that when **gicimanido** (the Great Spirit) smokes his pipe, he smokes all of the tobacco. So the others must do that too. The speaker takes the place of **gicimanido** at the feast. Since he takes the place of the **manido** (spirit), he has to behave like him. There were only two **manidog** at the time that they (the spirits) gave this thing (the Midewiwin) to Wenebojo;[1] so now when a person is going to join the Midewiwin, they call just one person first. After the

[1] Wenebojo is the Chippewa culture hero who made the world and started the Midewiwin.

speaker and the runner have emptied their pipes, they are told what this person is going to do. Then the speaker starts to speak. He talks about that theing they gave Wenebojo. He also speaks about the creation of man. He speaks of that **manido** at the bottom,[2] and asks that the **wamidewit** be just like the ones who were created that time. When he is through talking, he sings. He sings the song that the **manido** sang when he created the first people. If it's a man, he sings the song that the **gicimanido** sang. If it's a woman, he sings the song that the other **manido** sang. He starts twice, and he stops twice. When he is through singing, he talks a little bit more. The reason why he is talking is that he is talking for his **skabewis** (runner). He's asking the **manido** to clear his path for him, so that he will not run into any sickness of any kind. The runner leaves now and starts going around to different houses to invite the people to come to the house. These people whom they have called are supposed to come right away.

When they have all gathered together at this home, they are each given tobacco to hold in their hand. This is done by the **skabewis**, who passes the tobacco around. Only people who have joined the Midewiwin are invited. After they all have tobacco, the speaker starts to speak. He talks about the tobacco and which way it is to be accepted. He speaks of the heavens and of **gicimanido**. The four layers of the sky each have a **manido**. This is what the speaker asks: that these **manidog** will accept the tobacco. He also speaks to the four winds and asks them to accept the **wamidewit**'s tobacco. The speaker goes on to say that when you smoke and spit on the ground, that tobacco goes down to the **manidog** under the earth. He says that even the ones who first gave Wenebojo that gift get that tobacco too.

Then the **skabewis** bring the tobacco back. Then the speaker speaks of the four winds again and asks them to accept the tobacco of the person who is going to join the Midewewin. Then he asks the guests to smoke and chew. Then he's finished talking.

[2] A spirit at the bottom layer of the world, where all is dark, who, together with the Great Spirit, created the first human beings and "gave" Wenebojo the Medicine Dance.

After everyone has smoked and chewed, the speaker speaks about the food. He first looks around, and when he sees that everyone has smoked and chewed, he starts to speak about the food. Everybody that has been invited to the feast is given some of the food that is on the floor. Everyone has a dish of his own. The runner fills all of the dishes. He has made sure that everyone gets something. It doesn't take him very long. He fills up a man's dish first. The last dish he fills up must be a man's dish. Then the speaker talks about the food again, speaking the same way he did when he offered the tobacco, after the runner has filled all of the dishes. While the runner is filling the dishes, there is silence. You don't hear any noise. Then the speaker talks about the food. When he is through, the speaker speaks to the person who was first served. He tells him about the person who is going to join the Midewiwin. When the speaker is all through talking, the first one who was served starts to talk. He talks about the thing that the **manidog** gave to Wenebojo, when they gave him the Midewiwin. He says that he wishes that this person will get the benefit of the thing they gave to Wenebojo. After he is through speaking of that and of everything he wants to say, he sings. He stops twice and starts twice. After he's through singing, he doesn't say anything much more.

Now everybody eats. They eat very little, though.

The speaker talks some more then. He goes on to say that this person, the **wamidewit**, is all ready to join the Midewiwin and will start the next day. Then the speaker turns to the last person whose dish was filled and tells him that he will be the first to leave the door, leading the people. After the speaker has finished, the person whose dish was the last to be filled starts to speak. He doesn't say much. He just goes on to give thanks for the tobacco and the food. Then he says "When we have risen from our places, I will sing." Then everybody stands up. The singer pounds on his dish with his spoon. The drum and the rattle are played too by the speaker and the runner. The singer starts twice and stops twice. When he gets through singing, he makes a circular motion with his dish four times, and then goes out of the door. He waves the dish

about in this way to thank the **manidog** and his host. Then everybody follows him out of the door.

After they've all gone out, the speaker talks a little bit. He speaks for the person who is going to join the Midewiwin. The latter would be the one to say thank you, but he doesn't. The speaker says it for him or her. He says thank you for that tobacco and for the food. The people whom they invited to accept the food and tobacco — they were the **manidog**. They acted as the **manidog** while they were there. After the speaker has said these things, he says "I will sing now." He and the runner sing, only once. They use a water drum and a rattle When they're through singing, they're all through until the next day.

The next day the **wamidewit** cooks again. They do the same things they did the day before. The speaker is called again, and he brings his runner. The **wamidewit** fills up their pipes again and gives them food. But this takes place in the Medicine Lodge this time. The **wamidewit** has his food in the lodge with him; also the blankets, pail, and goods. Everything is supposed to be ready when the speaker and the runner arrive. He's waiting for them all by himself. When they come, he doesn't say much. He keeps still. The speaker hasn't much to say either, because he said all that he wanted to say the day before. When the speaker is through talking, he sings with his water drum. He starts twice and stops twice. When he's through singing, he doesn't say much. He just starts eating.

When the speaker gets through eating, he talks again. He talks about the things that the person is going to use. He goes on to say that he will see how much goods there are there. After he's through talking, the runner takes hold of the goods and puts them beside the speaker. Then he can count them. The speaker already has one of those blankets which the **wamidewit** placed before him. When they get all through, it will belong to the speaker. The speaker takes one of the pieces from the bundle and gives it to the runner. That piece of goods will be his when they get all through. The speaker and the runner count the rest of the stuff. When they know how much there is, they put the bundle of goods back where it was.

After that, they call six people to a feast served inside the lodge.

The person that was served first last time will be the first to be served now. The speaker has the privilege of naming the six people who will be invited to the feast. The runner goes out to call them. He takes a piece of tobacco along. He invites four people and gives the plug to the fourth. The runner tells him that he will be the one to give the hide. Then he asks two more people. These two won't do much; they'll just sit there. The first four are the important ones. They don't have to wait for the last two to come to the feast. Those two can come at any time.

The first person who is invited is called the **naganit**. ('leader').

The fourth person who is invited, the one who gets the plug is called **kaskimidagun wamigiwet.** ('hide-giver').

The last two who are invited are called **widakejik** ('people in the rear') or **bedikuskamagejig** ('people who make noise with their feet'). They have to make a lot of noise with their feet, so they pick people who are good on their feet. They are usually women.

The **naganit** doesn't have to be a Mide priest. Anybody will do.

When the four main guests have come in, tobacco is passed around to them by the runner. The speaker tells the four persons to smoke. After they have smoked, they are given food by the runner. They save some food for the other two if they aren't there yet.

After the runner has filled all the dishes, the speaker talks again. He talks about the bundle of goods and the drum and the rattle. He tells the **manido** under the ground, the **manido** who has charge of the Medicine Lodge, that he is going to take that bundle of goods. Then he and the runner take the goods, the drum, and the rattle over to the **naganit**. They take these things around the eastern part of the lodge four times in a counter-clockwise direction. The last time they stop for a short while before the entrance to speak a few words to the **manido** about the bundle. Then they go all around the lodge and place the pile of goods next to the **naganit**, with the drum

and rattle on top of it. The speaker then speaks to the **naganit** about what the **manidog** gave to Wenebojo. Now the first man who was invited (the naganit) has the chance to speak. He can say as much as he wants. When he's through, he sings, using the water drum. The one next to him uses the rattle. He sings just a little while; starts twice and stops twice. When he's through singing, he says that the second person will talk now. They push the bundle along to the second person. Then he talks and then sings. The third person accompanies him with the rattle. They do the same as the first pair and then pass the bundle along until all have done it.

The last two who were invited don't have to talk or sing, but they sometimes do. The fifth man accompanies the fourth on the rattle, though. When the fourth man is through singing, the bundle is pushed back to the first man who was invited. The latter talks a little bit, saying that they are now all through doing what they're supposed to do.

These six men now get up and walk four times around the lodge in a counterclockwise direction. However, the last two invited don't have to do this if they don't want to. The men stop by the door on the fourth time around, and the **naganit** talks a little bit there. When he has spoken in front of the door, he takes the bundle which he has been carrying in his arms. The second man is carrying the drum. The third man carries the rattle. The fourth man carries the other rattle, if there are two of them. They take all these goods and place them next to the man who is going to join the Midewiwin. Then the speaker tells the runner to go and place their two blankets, or other goods, in front of the **wamidewit**. The runner takes the blanket or goods which was in front of the speaker and takes his own blanket and places them on top of the bundle. Then the four or the six guests return to their places. Meanwhile, the runner has found time to make some little sticks; about twenty of them. He makes five more sticks which are pointed at the end. The speaker now talks and says that the **wamidewit** will now get up and take a blanket and place it before the **naganit**. All of the five peaked sticks are supposed to be placed inside the blanket which he takes over there. He sits down in front of the **naganit**. Then the

speaker gets up and goes over to them. He tells the **naganit** that the person who is going to join the Midewiwin wants him, the **naganit**, to give him (the initiate) the **megis** (shell).

Then the runner goes to get a shovel-full of dirt. (A can full of dirt is placed in the spot marked in the diagram.)

After the speaker has spoken to the **naganit**, he speaks to the second person. The latter speaks to the **wamidewit** and tells him how they are going to go about the Midewiwin ceremony and how they're going to use the dirt.

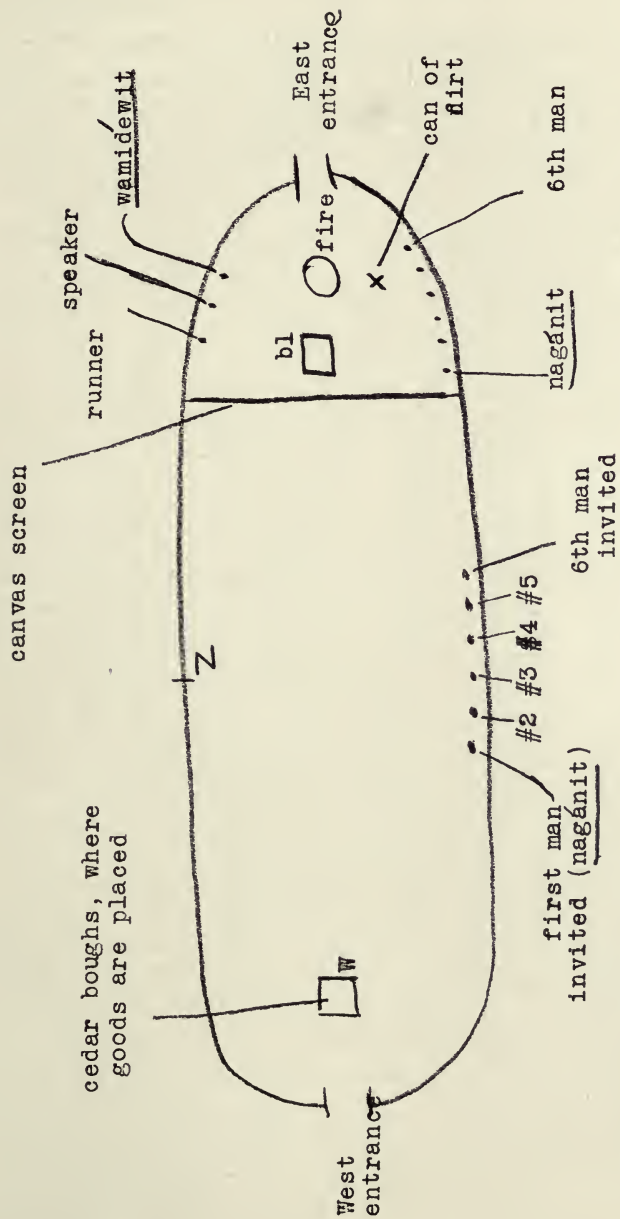
Then the speaker speaks to the third person and tells him that he must help them with the dirt in the can. Then the speaker speaks to the fourth one and tells him to help the others all he can. Then he speaks to the last two people who were invited, both at once, and tells them to help if they want to. Then he goes back to his place at the other side of the lodge.

Now the **naganit** speaks about his **megis** and what he was told to do. While he is talking, the second man gets the can of dirt and takes it to his own place, where he arranges the dirt in front of him in an oblong shape in a low heap about two feet long. This must be done before the first person gets through speaking. The **naganit** then unwraps the blanket which was placed in front of him and finds those five pointed sticks there. He hands them to the second person. The four sticks represent the four guests. The fifth stick represents the **wamidewit**.

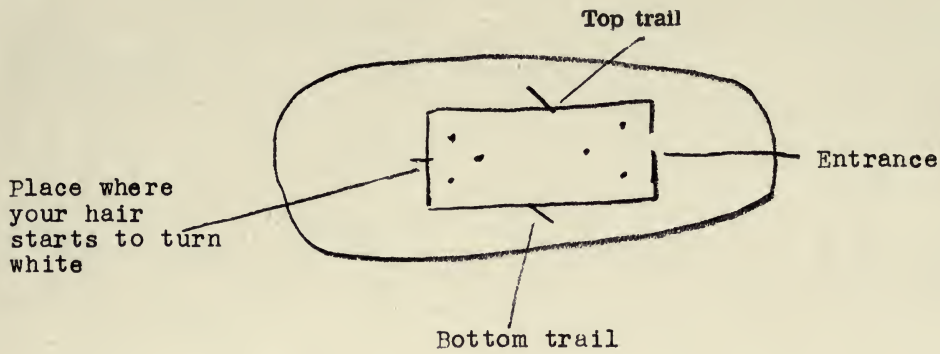
Sketch of the heap of earth with the diagrams drawn to instruct the **wamidewit**. The six little dots represent the **manidog** of the lodge. The long lines are made by plain wooden sticks, usually cedar, because it is easy to whittle. This diagram shows the initiate how the Midewiwin ceremonies are going to be performed and what the rite signifies.

Then the **naganit** gives his **megis** to the initiate. After that he asks the last two people who were invited to join them, and they all form a circle around the heap of earth. But the speaker and his runner remain in their places at the other side of the lodge.

When the **naganit** hands the five sticks to the second man,



Plan of the Mide Lodge at the first initiation. Arrangement of the six invited guests is given twice: as they sit in the eastern part of the lodge before the canvas screen is removed, and as they sit later.



Sketch of the heap of earth with the diagrams drawn to instruct the wamidewit. The six little dots represent the manidog of the lodge. The long lines are made by plain wooden sticks, usually cedar, because it is easy to whittle. This diagram shows the initiate how the Midewiwin ceremonies are going to be performed and what the rite signifies.

he takes one of them and places the stick in the heap of earth. (See diagram.)

The runner has the water drum beside him. He hands it to the speaker, and he takes the rattle. They sing and play all the while the **wamidewit** receives his instructions. They aren't supposed to listen to the instructions, which do not concern them.

All of the people sitting in the circle around the heap of earth give instructions to the **wamidewit**. But the last two don't listen half the time, and they don't have to be there if they don't want to. They have a good time; they can take it easy, lay down, or go off and get some tea.

The **naganit** has already given the five sticks to the second man, who gives one stick back to him. Then each of the people are given a stick to hold. The **naganit** talks to the **wamidewit** about the Midewiwin. "After we've finished teaching you," he says, "we will go." The **wamidewit** listens. The speaker and the runner keep drumming and singing. The **naganit** tells the **wamidewit** "After we go, the runner will hang your goods and stuff over the central pole. When he has done that, he will bring some sticks to me, and he will tell me how many times the speaker will sing."

The **naganit** explains the meaning of the marks in the heap of earth to the **wamidewit**. He tells him that if he doesn't listen, he will go off on the top road (marked in the diagram). He tells him that if he goes off on that road, he won't live long. But he says that if the **wamidewit** listens carefully, he will go along the path to the point where your hair starts to turn white (see diagram). "Then you will go on again," he says, "until you get to this mark here (at bottom of the diagram). If you don't do what is right and don't listen, there's another road that turns off here, and you will go along that. This road does not go very far. But if you live and do what is right, you will go past this little road, and when you have reached this place (the entrance of the lodge), you will be using two sticks to help you walk, one on each side." Then the **naganit** says, "Now I will tell you what we are going to do when we throw the hides. After I've finished teaching you, we will all go home."

After the **wamidewit** has received his instructions, everyone gives the sticks back to the **wamidewit**, and he goes back to his place at the other side of the lodge. Then the speaker and the runner stop singing. Then the six guests get up and walk once around the lodge (in a counter clockwise direction). Then they leave the lodge and go home.

The **skabewis** takes the bunch of twenty sticks and takes them to the **naganit**'s home, where he hands them over to the **naganit**. He says that he is only going to sing one pair of songs. Then he goes back to join the speaker in the singing.

The **naganit** goes from house to house, calling on all the persons who have joined the Midewiwin. He takes a pipeful of tobacco and ties it to the bunch of sticks. By this time, the speaker and the runner are supposed to be through singing in the lodge.

When the **naganit** gets to the lodge, he waits for the other five to arrive. When they're all there, they all walk around the lodge four times. They stop at the entrance, and the **naganit** speaks about the **manidog** of the lodge. The six invited guests are acting as **manidog**. The main **manidog** are at each side of the door. The **naganit** doesn't speak long, only a few words.

The runner has his drum in front of him. The speaker has his rattle. When the **naganit** steps into the entrance of the lodge, the runner hits the drum once. The rattle is shaken once at the same time.

The six guests have dishes of food. The **naganit** walks over to the **wamidewit**, who is sitting in his usual place, and hands him the dish of food and some tobacco. The other five do the same thing.

By this time, the cloth screen has been removed. It was taken away by the runner when everyone went home, and when the runner was also busy putting the goods over the central pole. Since the canvas screen is gone, the six guests file by and walk around the entire lodge (counterclockwise) until they reach the entrance. Here the **naganit** speaks. He says, "I am going to sing." The runner gets up and hands the rattle to the **naganit**. Then he sings. When he stops, the **naganit** continue walking to the other entrance, where he stops

again. He sings again. After he's through, he continues until he reaches the **wamidewit**, to whom he hands the bunch of twenty sticks. Then the **naganit**, who is always followed by other five, continues walking around the lodge (in a counterclockwise direction, as always) until they reach the point where the 'bottom trail' branches off. (Here they sit down in reverse order: 1, 2, 3, 4, 5, 6, from left to right.) (See diagram.)

The rest of the people invited by the **naganit** keep arriving at this time. They sit all around the sides until the lodge is full. They can sit anywhere, since they belong there too.

When the runner put the goods over the central pole, he placed two blankets, his own and the speaker's (on the spot marked **bl** in the diagram.) On top of them he placed the drum, the rattle, and some tobacco wrapped up in a handkerchief.

The speaker tells the runner to take the tobacco over to the **naganit.** He takes the rattle along too.

Then the speaker gets up and goes around the lodge (counterclockwise) and stops where the **naganit** is sitting. The speaker says to him, "The person who is going to join has no tobacco. He has just a little bit, but I don't want you to worry about him. You can smoke this tobacco any time you feel like it, and if you have enough for all of you, you can give thanks to yourselves." He says that because these six people represent the **manidog**. They have just given the **wamidewit** a lot of tobacco, so it isn't true that he has none. But they always say this. The speaker wants them all to feel full of love and affection for the initiate.

The **naganit** hands the tobacco to the second person. The latter is the one who tells the others when they can smoke the tobacco. Then the **naganit** goes up to the **wamidewit** and says, "This is the way the food and the tobacco will look as long as you live and take part in the Midewiwin. You can partake of this food and tobacco whenever you wish." He's speaking of the food and tobaccoo the six guests gave to him.

Meanwhile, the second person is singing for the tobacco they received from the **wamidewit.**

When the **naganit** has finished speaking, he proceeds around

the lodge until he reaches his place. Then he sits down.

The **wamidewit**'s goods are still hanging over the central pole. Now the speaker gets up, walks around the lodge until he reaches the **naganit**, and says that they are ready to take the goods down. He tells him that the goods can be placed on the cedar boughs. (The spot marked **W** in the diagram.) This is where the goods are piled up. When the speaker has finished telling him that, he continues around the lodge until he reaches his place.

The speaker's words have been heard by the runner, who takes all the goods off the central pole and piles them on the place (W) where the cedar boughs are. He starts removing the goods from the western end of the pole first.

The speaker gets up and goes around to the **naganit** and tells him that the **wamidewit** will get up now. The **wamidewit** now goes around the lodge four times with the speaker right behind him. The speaker sings and shakes his rattle. The runner hits on the drum now and then; just gives it an occasional blow. After they've gone around four times, they stop next to the pile of goods. Then the speaker stops singing.

The speaker and the **wamidewit** have now gone all the way along the road that he was told about. This is the first time that the **wamidewit** has ever been on this road. The **wamidewit** now sits down in front of his pile of goods, (in the spot marked W) at the western end of the pile of goods. He faces eastward, looking at his pile of goods.

The speaker goes to the **naganit** now and talks about the person who is going to join the Midewiwin. He tells him that the **wamidewit** is already sitting over there, and that the **wamidewit** does not yet know how the **megis** (shell) looks. He says that the **naganit** will have to show him how it looks, and that after he has seen how it looks, the **naganit** will put the **megis** back again. Then the speaker tells the **naganit** where he will point the hide. Then the speaker says exactly the same thing to the others and tells them where they will point their hides.

On the second, third, and fourth times — up to the eighth —, when a person joins the Midewiwin, there are marks made with red or blue pigment, any color, it doesn't matter which,

on any part of the body. It doesn't have to be an affected part of the body. When you go through the Midewiwin the second time, there are five persons who point the hide. The third time there are six. So there are five marks made on the initiate's body the second time; six the third. The first time, however, no marks are made.

The speaker tells the last two guests, the fifth and sixth, to help the others out and to make a noise with their feet while the hides are being pointed. That's their main job: to make a noise with their feet. That's why they're called the "foot-noisers" (the Mide priest's English phrase, his translation of the Chippewa term **bedikuskamagejig**). The "foot-noisers" don't say anything.

After the speaker has spoken to all of them, he goes along the lodge back to his place. He waits for the people he spoke to to get up. Then they get up and circle around the lodge once. They stop at the entrance. The **naganit** speaks. He says, "I'm going to sing." He sings about the **megis**, so that the **wamidewit** will understand about the **megis**. The other three sing too. He starts twice, and he stops twice. The speaker and the runner drum and rattle. After they're through, they all go around again. The **naganit** stops at the entrance again, and the others stand behind him. He just stops there a while; then the **naganit** goes and gets behind the fourth man. The other three do the same thing, until the **naganit** gets back into first place again.

The two blankets of the speaker and the runner are still there. The **naganit** doesn't say much more after they've exchanged places. Then he makes a noise "**e'he'! e'he'!**" Then they all go around again. The others make the noise too. When they reach the pile of goods where the **wamidewit** is, they stop and make the same noise "**e'he'! e'he'!**" Then stop at the south side of the goods, and each man places a **megis** on the top blanket. The **wamidewit** reaches over and arranges the shells in an orderly row.

Then the four — or six — proceed around the lodge again. When they reach the south side of the pile of goods again, the **naganit** holds out his hand, and the **wamidewit** puts the **nag-**

anit's shell into the palm of his hand. The others file by, and each person gets his **megis** back. Every time a shell is put into a person's hand, the drum beats just once.

After each man has his shell back, they all proceed along the side of the lodge and stop once more at the entrance. The **naganit** doesn't say many words. He just says that they are going to run upon their grandmother's back. "We are going to run around the lodge once, if we can." Then they run around the lodge once, if they can, and finally stop at the north side of the pile of goods. They are carrying their hides then. They kneel down at the north side of the pile of goods and put the shells back into their hides. Then the **naganit** gets up, followed by the others, and they proceed around to the eastern entrance once more. The **naganit** tells them all again where they are going to point their hides.

When he's through, he says he's going to load up his gun. Then he blows on his hide and makes a noise: "he' he' he' he'!" and lifts it up in front of his face and says "paxoho!" Then he lowers it and says "Ya haw haw ha!" Then he walks ahead saying "hi hi hi hihi hi" until he reaches the place (marked Z in the diagram) where he points the hide at the **wamidewit**'s chest. The others don't point their hides. They just follow him, circling the lodge until they reach the eastern entrance again. Then they circle around the blankets (bl) and change places again, as before. This time, the second one goes first, makes the same noises, stands at the same place (Z) and points the hide at the same place, the patient's chest. The next time around, the third one does it. The fifth and sixth follow all the time, making a noise with their feet.

When the fourth man goes around, he starts off by singing and dancing at the entrance. After he's sung one song, he says that he's going to load up his gun too. Then he does as the others have done and makes the same noises. Then he starts to dance and sing again. After that he says "Ya haw haw ha!" four times. Then he walks to the place (Z) and points his hide at the **wamidewit**. When he does that, the **wamidewit** falls over forward with his arms stretched out.

The **wamidewit** has kept a **megis** in his mouth — the one they gave him when he received his instructions. He put it

in his mouth while the four guests were circling around the lodge.

Now the **naganit** holds the **wamidewit**'s head. The second man holds his shoulder, the third man his other shoulder, and the fourth man his hips. The **naganit** says "wixihihihihihihi!!" four times while he holds the **wamidewit**'s head, and the **wamidewit** drops the **megis** from his mouth. The **naganit** takes the shell and goes all around the lodge with it. When he gets back to the **wamidewit**, he holds his head with one hand. With the other he holds the shell and moves it back and forth, near to and away from the **wamidewit**'s mouth, saying "wixihihihi hihi" four times as he does so. The he points the shell to the east. Then he does the same thing again, saying "wixihihihihi" four times. Then he points the shell to the north. Then he repeats the process. Then he points it to the east. Then he repeats the process. Then he points it to the south. Then he repeats the process. Then he points it to the ground. Then he repeats the process. Then he points it up. Then he speaks. He talks about the dish which is in the center of the earth, which is full of food. He says, "This is the food which I am giving to the **wamidewit**." There is no such dish. He just says that. Then he repeats the "wixihihihihi" process four times, moving the shell toward and away from the **wamidewit**'s mouth. The fourth time, he put the shell into the **wamidewit**'s mouth. Then the **wamidewit** falls over on his face again. The fourth man then places the hide they're giving him over the **wamidewit**'s right arm, as he lies there.

The speaker and runner are still sitting in their places. Now, when the six go back to their places, the speaker and the runner start to sing, as soon as the others have got to where they were. Then the **wamidewit** gets up and takes his hide and walks around the lodge once until he reaches the **naganit**. Then he blows on his hide and points it at the second man. He does the same to the third and fourth. Then he walks on. At the entrance the **wamidewit** starts to dance, while the speaker and runner sing, drum, and rattle. Then the **wamidewit** dances all around the lodge. He stops at the entrance. Then the speaker and **skabewis** stop singing and drumming

too. Then the speaker asks the **wamidewit** if he has any food to feed the six people who represent the **manidog.**

The **wamidewit** has to have food. It's being prepared outside by his relatives. The runner goes and takes the pile of goods over to where the **wamidewit** is sitting — in his original place. Now the western end of the lodge is all clear, so food can be laid out in the middle. The **wamidewit**, the runner, and anyone else who wants to help go and get the food and bring it over to the six people. After they're served, all of the other people in the lodge get food. The food for the others is placed in the middle aisle. They all help themselves.

When everyone is through eating, the speaker talks again. He speaks about the drum. The drum is always placed on the blankets (at 'bl') when not in use. The speaker says that the drum is going to be given to the six people across the aisle. The runner goes and gets the drum. He also takes the blankets to the speaker. The runner carries the drum and walks behind the speaker around the lodge. They go around once. They stop at the eastern entrance, where the speaker sings. When they're through singing, they proceed to the western entrance, where they sing again. After that, they go back to the eastern entrance, where they sing again. At this point everybody in the hall dances. Then they go around again and sing at the western entrance, just one song each time. Everybody dances again. They go around the lodge once more, circle around the spot (marked 'bl') and go around to the western entrance, where they circle around the spot (marked W). Then they circle around the lodge again until they reach the place where the bottom trail branches off. Here they make a circle in front of the **naganit** and place the two blankets in front of him. The runner puts the drum on top of the blankets. Then the runner goes back to his place. The speaker talks to the **naganit** and tells him that he can sing as long as he wishes. He says that it's up to him how long he wants to sing. He speaks only to the **naganit**. Then he goes back to his place. When he spoke to the **naganit**, he meant it for all the other five as well.

The **naganit** takes the drum-stick and goes around the lodge with it. When he sits down again, he speaks a few words, not

much, about how long he will sing. Then he sings. After a few songs, there's a song in which everybody dances. Then the **wamidewit** gets up and walks over to the **naganit**. He dances there in front of him. The **naganit** drums and sings. The second man shakes the rattle.

After the **naganit** is through singing, he passes the blankets and drum along to the second man, who sings. He sings the same way. Then it's passed on to the third man; then to the fourth. The **wamidewit** dances in front of each man. The last time he dances is in front of the fourth man. After that the "foot-noisers" sing. Then, when they're all through, the blanket and drum are pushed back to the **naganit.**

Then the **naganit** gets up to speak. He says that he's going to take the two blankets and drum back to the **wamidewit**. He takes the blankets and the rattle. The second man takes the drum. They all get up and proceed around the lodge once, stopping at the eastern entrance. Here the **naganit** sings once, accompanied by the second man. Then they go and sing at the western entrance; then back to the eastern entrance. The second man sings a dancing song here. Everybody gets up to dance. When they're through, they go back to the western entrance and sing again. They they go back to the eastern entrance, where they start singing "hi hi hi hi" as they continue going around. We have a good time when we do that. They go around once, circle around the spot (marked 'bl'), go around the lodge, circle the spot (marked W), making all kinds of noises. They go around four times making all kinds of noises, with drums and rattles going. They make the most noise and have the most fun when they circle around the place (at 'bl'). They can go around there twice if they wish, — it's up to the **naganit** — after they've gone around the lodge four times. Then they put the blankets, the drum, and the rattle down (at 'bl'). They they go back and sit down.

Then the speaker goes around to the **naganit** and talks to him again. He tells him that the rest of the blankets, now next to the **wamidewit**, have to be placed (at 'bl') too. Then he goes back to his place and sits down. The runner gets up, takes the rest of the blankets, and puts them with the others

(at 'bl'). When he's done that, the speaker goes and speaks to each one of the six, beginning with the first. He says the same thing to each person. He tells them that the shells have to be placed on top of the bundle of goods. Then he returns to his place.

The six people circle once around the lodge. The next time around they stop at the eastern entrance. The **naganit** speaks about the **megises** there. Then he says, "I'm going to sing." Then he sings. He starts twice and stops twice. Then they all go around saying "he' he' he'!" As they pass the pile of blankets, the second time around, they place the shells on top of the blanket. The **wamidewit** is sitting there (at the west side of 'bl').

The six keep on going around, they hold out their hands, and the **wamidewit** places each person's shell back in his hand. Then they go around again, stopping at the eastern entrance. The **naganit** speaks again. He says that they're going to run on their grandmother's back again, if they can. They're going to run around once. After they've gone around the lodge again, the six stop at their original places at the eastern end of the lodge. Then they all kneel down and put their shells back into their hides. Then they get up, walk along, and stop at the eastern entrance. The **naganit** speaks again. He says he's going to load his gun again. He makes all the same noises as before and goes around the lodge. The **wamidewit** has gone back to his original place now.

When the **naganit** loaded his gun, the others loaded theirs too. After they've gone around the lodge, all four of them then point their hides four times at the **wamidewit** as they go past him. The "foot-noisers" follow the other four and point their hides, first at the speaker, then at the runner, and then at the **wamidewit.**

After the **wamidewit** had given the six their shells back again, the pile of goods was taken back to be placed next to the **wamidewit** by the runner. After the "foot-noisers" have gone by, the speaker and runner go to where the blankets and goods have been ('bl'). They stand there and sing. They sing for a long time, stopping four times. When they get through, the runner takes the drum-stick and the rattle to the

naganit and the second man. Then the latter go to the place (marked 'bl') and sing. They stop four times. When they're through, they take the drumstick and the rattle to the third and fourth men, who come and sing. They they take the drumstick and rattle to the "foot-noisers", who go and sing.

While this singing is going on, everybody in the lodge starts to use their hides. Some have got up. Others keep sitting down, but they all point their hides at one another. There is another runner there now. The two runners stand side by side in the middle of the aisle. They have plain sticks, about two and a half feet long, which they point to a person who is then allowed to point his hide. The "foot-noisers" start pointing their hides at the people who are sitting around the lodge.

After the six guests have sat down, the **wamidewit** gets up. He points the hide four times at each of the four main ones. Then the "foot-noisers" point to the people who are sitting next to the eastern entrance. The people all file around the lodge, pointing their hides. While they are pointing their hides, there are always two people singing in the center of the lodge. First the speaker and the runner: then the **naganit** and the second man; then the third and fourth. While they are taking turns in singing, everybody who has joined the Midewiwin has a chance to point his hide.

If you had a hide pointed at you, you would get sick and die. The only way you could get well then would be to join the Midewiwin. It's dangerous, when they're pointing hides. That's why the two runners watch out — to make sure that no young kids get in by mistake. The runners know who have joined the Midewiwin. They point to these people with their sticks, and then they can point their hides.

After the hide-pointing is all over, everybody eats. Then they all go home. That's all.

We have no 'candidate sticks' (**midewatig**) here and no tobacco rocks, like they have at Reserve. It's different there. I once went to the Midewiwin at Reserve and couldn't understand what they were doing.

THE HANSON PETROGLYPHS, VERNON COUNTY, WISCONSIN

A. Dewey Buck, Jr. and William H. Wilson

In August of 1960, during an archaeological survey [1] of the proposed reservoir on the Kickapoo River, north of LaFarge in Vernon County, Wisconsin, a small group of previously unreported petroglyphs was discovered. The petroglyphs are located on a sandstone bluff near the top of a large ridge overlooking the Kickapoo River valley in the SW¼ of the SW¼ of Sec. 8, T31N, R2W.

The bluff, a soft fine-grained sandstone ranging in color from cream to yellowish brown, serves as an ideal substratum for carving petroglyphs but is too soft for ideal preservation. The present condition of the bluff, with some freshly exposed and some badly eroded areas, indicates that originally there may have been more figures in addition to the ones described below.

The group consists of three essentially complete bird figures and a portion of one wing of a fourth. All the figures appear to have been made by rubbing grooves, approximately ½ inch in width and ¼ inch in depth in the soft sandstone. At the present some of the lines are almost obliterated. The largest figure is 12½ inches high with a wing span of 20¼ inches, and appears to be a representation of a bird man. The head is badly eroded so that the facial features are not present but the general body shape and the form of the legs are human. Beneath one wing of this figure is a small bird of a different style, 3½ inches in height and with a wing span of 3½ inches. Stylistically this is the simplest figure of the group, a pair of wings with a bump to represent the head and an "X" to represent the body and legs. The third figure, 3½ inches in height with a wing span of 8 inches, is also stylistically simple with straight extended wings and a straight tubular body, slightly curving and pointed at one end to represent the head and beak. The fourth figure is a portion of one wing which is identical to the wings of the "bird man" figure.

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[1] The survey was sponsored by the State Historical Society of Wisconsin in cooperation with the National Park Service.

Figure I. General view from the south of the bluff on which the Hanson Petroglyphs are located. The Kickapoo River is on the east end of this bluff formation.

Figure II. The Hanson Petroglyphs.

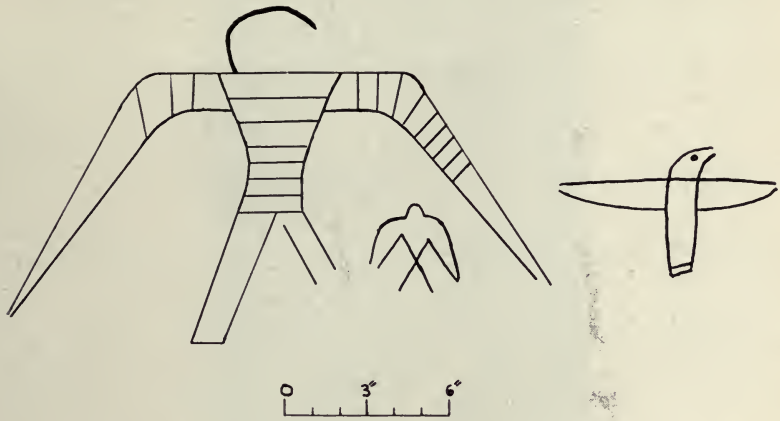

Figure III. Scale drawing of Hanson Petroglyphs.

Of the sixteen previously reported petroglyphs sites in Wisconsin (Ritzenthaler, 1950; 1953), five have carvings representing birds. The three types of bird figures in the Hanson group are, however, unique for Wisconsin. The large "bird man" figure is similar to the "eagle dancer" from the Gullickson Glen Rockshelter (Wittry, 1958). The wings and general body shape of the two figures are quite similar but the legs are different. The legs of the "eagle dancer" are very thin and curved giving an appearance of motion as opposed to the straight stationary legs of the "bird man." The two other Hanson figures are quite unlike any reported figures.

Due to the lack of any other archaeological remains at the site, no attempts will be made to assign the Hanson Petroglyphs to any cultural period.

REFERENCES CITED

RITZENTHALER, Robert E.
1950 "Wisconsin Petroglyphs and Pictographs" **The Wisconsin Archeologist,** Vol. 31, No. 4, pp 83-129.
1953 "Buffalo County Petroglyph" **The Wisconson Archeologist,** Vol. 34, No. 4, pp 207-209.
WITTRY, WARREN L.
1958 Unpublished field notes

LAPHAM MEDAL AWARD

At the October meeting of the Wisconsin Archeological Society held in Milwaukee the Lapham Research Medal was awarded to Dr. Chandler W. Rowe of the anthropology department, Lawrence College. The medal, awarded for outstanding contributions to the field of Wisconsin Archeology, was the 29th to be given in the history of the Society.

Dr. Rowe received his B. A. degree at Beloit College, and Ph. D. from the University of Chicago. He has had wide experience in archeological field work including the Southwest, Virginia, Tennessee, and Hawaii. In the Wisconsin field he has led field excavations at Heller Mounds in Winnebago County, Diamond Bluff in Pierce County, and at Aztalan in Jefferson County. His publications on Wisconsin Archeology include the following:

Preliminary Report of the Heller Mound Group. Wis. Arch. Vol. 34, No. 2. June, 1953.

The Use of Earth Moving Machinery at Aztalan. Wis. Arch. Vol. 36, No. 3, Sept. 1955.

A Crematorium at Aztalan. Wis. Arch. Vol. 39, No. 1, March 1958.

Testing Operations at the Ox-Bow Site. Wis. Arch. Vol. 37, No. 4, Dec., 1956.

The Effigy Mound Culture of Wisconsin. Milwaukee Public Museum Publications in Anthropology No. 3, 1956.

The Wisconsin Archeological Society congratulates Dr. Rowe as a recipient of the Society's highest honor.

Robert Ritzenthaler
Chr. Lapham Research Medal Committee

WISCONSIN LAWS PERTAINING TO ARCHEOLOGY

At the last board meeting it was decided to republish the two State laws pertaining to the preservation of prehistoric remains, and the manufacture and sale of fraudulent articles. They are as follows:

No. 264, S.

A bill to create sections 4442m, 4442n and 4442o of the statutes, relating to prehistoric Indian remains on public lands and providing a penalty.

The people of the state of Wisconsin, represented in senate and assembly, do enact as follows:

Section 1. There are added to the statutes three new sections to read: Section 444m. It shall be unlawful except as hereinafter provided to destroy, deface, mutilate, injure, or remove any Indian burial, linear or effigy mounds, enclosures, cemeteries, graves, plots or cornhills, garden beds, boulder circles, pictograph rocks, caches, shell or refuse heaps, spirit stones or manitou rocks, boulder mortars, grindstone rocks, or other prehistoric or historic Indian remains located upon the public lands, state parks, forest preserves, lands of state educational or other state institutions, or upon other lands or properties belonging to the state; provided, however, that the board, commission, or other state officer or officers having control under the laws of the state of the lands or properties upon which they, or any of them, are situated may grant to state, county, municipal or national educational institutions, or regularly organized archeological or historical societies, permission to explore or investigate for educational or scientific purposes.

Section 4442n. The state park board is authorized to grant permission to remove or destroy any of the prehistoric or historic remains herein enumerated whenever said board shall deem such removal or destruction necessary.

Section 4442o. Any person violating any of the provisions of section 4442m of the statutes shall be deemed guilty of a misdemeanor and upon conviction thereof shall be subject to a fine of not less than ten dollars nor more than one hundred dollars or imprisonment in the county jail for not more than ninety days or by both such fine and imprisonment.

Section 2. This act shall take effect and be in force from and after its passage and publication.

No. 724, A

A bill to create section 4454m of the statutes, relating to the reproduction or forgery of archeological objects.

The people of the state of Wisconsin, represented in senate and assembly, do enact as follows:

Section 1. There is added to the statutes a new section to read: Section 4454m. The reproduction or forgery of any archeological object which derives value from its antiquity, or the making of any object whether copied or not, with intent to represent the same to be the original and genuine, with intent to deceive or offer any such object for sale or exchange, representing the same to be the original and genuine, or knowingly having possession of any such reproduced or forged objects with intent to offer the same or original and genuine, is hereby declared to be a misdemeanor, and any person convicted thereof shall be punished by a fine of not less than ten nor more than one hundred dollars or by imprisonment in the county jail for not more than ninety days or, by both such fine and imprisonment.

Section 2. This act shall take effect and be in force from and after its passage and publication.

BOOK REVIEWS

INDIAN LIFE IN THE UPPER GREAT LAKES, George Irving Quimby. University of Chicago Press, Chicago, 1960. 182 pp., 75 illustrations. $5.95.

This is a handsome, authentic, and readable volume on the Indians of the Upper Great Lakes Region covering a period from 11,000 B. C. to 1800 A. D. Some two-thirds of the book is devoted to the prehistoric peoples of this area beginning with the Paleo-Indians, and covering cultures of particular interest to the Wisconsin specialist such as Old Copper, Hopewell, Woodland, Effigy Mound, and Lake Winnebago. The final third of the book discusses the early historic period and presents brief ethnographies of such tribes as the Huron, Chippewa, Ottawa, Potawatomi, Sauk, Fox, Miami, Winnebago, and Menomini. The last chapter is devoted to the impact of the white man, and, especially, the fur trade on these tribes resulting in the ultimate collapse of their traditional ways of life. There is a useful glossary of anthropological and geological terms in the back.

This book should be in the library of everyone interested in Wisconsin archeology.

Robert Ritzenthaler

WORLD OF THE MAYA, Victor W. Von Hagen. Mentor: Ancient Civilizations. Published by The New American Library, New York, 1960. 224 pp., 61 figs., 24 plts. 50 cents.

This handy paperback book represents the author's third venture in the Mentor series devoted to Ancient Civilizations. Previously he has published a book on the Incas of South America (1957) and on the Aztecs of Mexico (1958). In a readable and vivid fashion, Von Hagen covers the historical and geographical background of the Maya civilization, its social structure, settlement pattern, architecture, and its artistic and scientific achivements. Although many of the author's personal theories and far flung inferences are included, the book contains a good amount of valuable information. Unfortunately, Von Hagen has confined his discussion to the

Northern Maya of the rainforest of Guatemala and of Yucatan, and has omitted the equally important Southern Maya who lived, and still live in the Highlands of Guatemala and neighboring Chiapas, Mexico. The booklet (but not the cover) is excellently illustrated by Alberto Beltran and contains many well reproduced maps and archeological site plans.

Stephan F. Borhegyi, Director
Milwaukee Public Museum
Milwaukee, Wisconsin

NOTICE **NOTICE**

The Revived

PLAINS ANTROPOLOGIST

The **PLAINS ANTHROLOGIST,** journal of the "Plains Conference for Anthropology" has been revived and revised in a new format, and is now to appear on a regular schedule. Developing out of the old **Plains Conference Newsletter,** this became the **PLAINS ANTROPOLOGIST** in 1954, went through eight issues and became dormant in May, 1957. In the new format (7" x 10"), offset printing (reduced type size), and attractive cover, the 9th issue was available in June 1960 and the 10th issue in November 1960. It will appear **four** times a year thereafter.

The new EDITORIAL STAFF promises a TOP QUALITY JOURNAL covering all aspects of anthropolgy in, and relating to the PLAINS.

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AUTHOR INDEX

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QUICK GUIDE TO VOLUME NUMBERS

Old Series		Vol. 5	1926
Vol. 1	1901	Vol. 10	1930
Vol. 5	1905	Vol. 15	1935
Vol. 10	1911	Vol. 20	1940
Vol. 15	1916	Vol. 25	1944
Vol. 20	1921	Vol. 30	1949
New Series		Vol. 35	1954
Vol. 1	1922	Vol. 40	1959

ACHEN, FRANK
Some Points from Lake Monona n37-85
ADAMS, VINA SHERWOOD
Mandoka n14-41.
ALBERTS, ROBERT C.
Trade Silver and Indian Silver Work—Great Lakes Area n34-1.
The Albert Green Heath Collection n37-51.
ALBRIGHT, JAMES G.
Exploration of a Mound on Fox Island in Rest Lake, Vilas County o2-14.
ALFRED, LORRAINE
King George II Indian Peace Medal n16-4.
Literature on Wisconsin Shellheaps and Artifacts n17-20.
Menomini Indian Medals n14-95.
Orrin Thompson n15-10.
ALLER, Wilma F.
Aboriginal Food Utilization of Vegetation by the Indian of the Great Lakes Region—as recorded by the Jesuit Relations n35-59.
ANDREW, WILLIAM K.
A Fluted Stone Axe n18-75.
ANDREWS, ALICE B.
The Yuma Point n15-45.
BABCOCK, WILLOUGHBY M.
A Minnesota Banner Stone n5-62.
A Minnesota Copper Pipe n7-218.
Minnesota Indian Life n14-9.
BAERREIS, DAVID A.
Some Comments on Trait Lists and the Hopewellian Culture n30-65.
The Wisconsin Archaeological Survey n29-18.
A Note on a Winnebago Medical Technique n34-139.
The Airport Village Site, Dane County n34-149.
Burial Complex of the Reigh Site, Winnebago Co., Wis. n35-1.

Further Information on the Frost Woods Mound Group n35-43.
Report on the Dietz Site n37-1.
Burial Complex of the Reigh Site, Winnebago Co., Wis. n38-244.
Aztalan Revisited—An Introduction n39-2.
The Aztalan Lithic Complex n39-5.
Late Woodland Pottery in Wisconsin as seen from Aztalan n39-35.
Domestic Houses at Aztalan n39-62.

BAILEY, W. H.
Potato Lake, Rusk County Mounds o11-93.

BARDEN, JOHN A.
Brule River Copper Sources n9-122.

BARNOUW, VICTOR
Reminiscenses of a Chippewa Mide Priest n35-83.
A Chippewa Mide Priest's Description of the Medicine Dance n41-77.

BARRETT, SAMUEL A.
American Museums Association Meeting, May 17, 1926 n5-88.
The Ancient City of Aztalan o19-7.
Huron Herbert Smith n12-69.
The Lapham Research Medal n5-49.
Recent Excavations at Aztalan n12-74.

BARTON, ALBERT O.
Black Hawk Retreat in Dane County n24-61.
Grant County Indian Remains o15-177.
Kumlien Mounds Scene of Kumlien Centennial n24-68.
Taylor County Notes o11-91.
Where Wisconsin Names Originated n-26-84
Wisconsin's Charles Brown n25-45.

BASTIAN, TYLER
The Beloit College Mound Group, a Preliminary Report n39-155.

BAUCHLE, WILL F.
Archaelogy and Radio n14-18.

BEAN, E. F.
Increase A. Lapham, Geologist n16-79.

BEAUBIEN, PAUL L.
Hopewellian Mounds at Effigy Mound National Monument — Iowa n34-125.

BECKER, R. H.
The Chetek and Rice Lakes o16-83.
Researches in Wood and Portage Counties o11-39.
Turtle Creek Mounds and Village Sites o12-7.

BEHNCKE, NILE JURGEN
How the Stars Were Brought Back to the Valley n19-93.
Legend of Island Park n19-90.
The Oshkosh Public Museum n23-19.
Winnebagoland Legends 20-31.

BELL, EARL H.
Archaeological Research in Wisconsin n12-1.
An Evaluation of Recent Nebraska Finds Sometimes Attributed to the Pleistocene n13-49.
Nebraska Archaeology n13-1.

BENNETT, JOHN W.
A History of Mississippi Cultures n24-33.

BERRY, J. BREWTON
Archaelogical Activity in Missouri n16-1.
BISCHOFF, ROBERT
The Peyote Cult n29-28.
BLACK, ROBERT
Geology of Raddatz Rockshelter, Sk5, Wis. n40-60.
BLACKHAWK, JOHN
Indian Folktales n7-223.
Winnebago Indians and the Mounds n8-106.
BLAKE, BRADLEY
The Warnke Mounds in Portage County n37-25
Bigelow-Hamilton Site "I" n37-65.
BOEKELMAN, HENRY J.
Archeo-Conchology in the Union of Soviet Socialistic Republics n-18-93.
Archeo- and Ehno- Conchology n17-13.
BOUDEMAN, DONALD O.
Bird-Stone Ceremonial Found on Skull n24-17.
BRANNON, PETER A.
Urn Burials in Alabama n9-110.
BROWN, CHARLES E.
Aboriginal Evidence in Northwest Wsconsin o13-7.
Achen Mound Group n26-40.
Additional Barbed Stone Axes n18-63.
Additional Bird-Stone Ceremonials o8-106.
Additional Information on the Distribution of Discoidals, Cones, Plummets, and Boat Stones in Wisconsin n5-64.
Additional Notes on Vilas and Oneida Counties n3-52.
Additional Stone Spuds n5-79.
Additional Trade Implements o18-16.
Additional Wisconsin Indian Medals o17-22.
Additional Wisconsin Spirit Stones o20-87.
Additions to List of Wisconsin Aboriginal Pottery o4-19.
Additions to the Record of Wisconsin Antiquities II o7-1; III o8-113.
Airplane Photograph of an Indian Effigy Mound n6-105.
Algonkian Artifacts o19-25.
The Antiquities of Green Lake o16-1.
Archaeological History of Milwaukee County o15-23.
Archaeological Reconnaissance of Juneau County o17-107.
Awarding the Lapham Medal n14-87.
The Banner Stone Ceromonials of Wisconsin o10-145.
Barbed Stone Axes n9-139.
Beaver Dam Lake n1-7.
Bird-Stone Ceremonials of Wisconsin o8-5.
The Brule-St. Croix Portage Trail n14-34.
Cartographic Symbols for Archaeological Survey Maps n8-129.
Cassville Mounds and Sites o15-193.
Ceremonial Knives o13-176.
The Charles H. Hall Collection n6-59.
Checklist of Wisconsin Indian Implements n8-81.
The Chetek and Rice Lakes o16-83.
Chipped Flint and Quartzite Knives o20-7.
The Collection and Preservation of Local Archaelogical Data o2-102.
Copper Adze n23-17.
Copper Bird Effigy Ornament n11-104.

Corner-Tang Flint Artifacts n16-62.
Curve-Tailed Panther Mounds n16-10.
The Dedication of the Fort Atkinson Intaglio o19-197.
Delavan Lake n6-7.
Delavan Lake Mounds n3-132.
The Desired Purchase and Preservation of the Celebrated Man Mound o6-45.
The Distribution of Discoidals, Cones, Plummets and Boat Stones in Wisconsin o8-139.
A Double-Bitted Axe in the W. H. Vogel Collection o1-87.
Effigy Platform Pipe n8-13.
A Field Assembly of the Wisconsin Archaelogical Society at Carroll College o6-1.
Field Work in 1939 n20-69.
Fifth Addition to the Record of Wisconsin Antiquities n4-9.
Fire-Steels n10-65
Flint Scrapers o20-33.
Fluted Copper Spud n21-65.
Fork-Tailed Bird Mounds n15-36.
Fourth Addition to the Record of Wisconsin Antiquities o10-165.
Fox Lake o20-111.
The "Grand Spring" n 24-78.
Grant County Indian Remains o-15-177.
Grooved Stone Axes o17-1.
A Group of Indian Mounds on the Pecatonica River o9-117.
Halvor Lars Skavlem n19-47.
The Heim Effigy Mound n18-39.
Henry Pierpont Hamilton o18-93.
The Huff Mandan Village Site n9-120.
The Implement Caches of the Wisconsin Indians o6-47.
Indian Caves in Wisconsin n5-7.
Indian Drills and Reamers n24-25.
Indian Fords of the Rock River n15-69.
Indian Gravel Pit Burials in Wisconsin n3-65.
Indian Mounds in Wisconsin State Parks n15-1.
Indian Trade Finger Rings n24-7.
Indian Trade Implements and Ornaments o17-61.
Indian Village and Camp Sites of the Lower Rock River in Wisconsin n9-7.
Intaglio Mounds of Wisconsin o9-5.
An Interesting Type of Flint Spearpoint n3-95.
Isle Royale National Park n15-12.
The Joint Meeting at Ripon n10-116.
The Joint Meeting of Wisconsin Scientific Societies o7-107.
The Joint State Assembly at Manitowoc and Two Rivers, Aug. 23-24, 1912 o11-61.
A Koshkonong Pilgrimage o15-200.
La Crosse and Monroe County Notes o11-97.
The Lac Court Oreilles Region o14-41.
Lake Geneva and Lake Como n7-129.
Lake Monona n1-119.
Lake Wingra o14-75.
A Large Fluted Stone Axe n21-1.
Little Green Lake n6-120.
Log Building Museums of Wisconsin n24-46.
Louise Phelps Kellogg n23-86.
Marie C. Kohler n24-82.

Monona Mounds n24-78.
Myths, Legends and Superstitions about Copper n20-35.
Native Copper Harpoon Points n7-50.
The Native Copper Implements of Wisconsin o-3-49.
The Native Copper Ornaments of Wisconsin o3-101.
1943 Archaeological Findings n25-7.
Notes on the Occurrence and Use of Bone, Shell, Hematite and Lead Implements in Wisconsin o9-11.
Notes on Some Archaelogical Features of Eau Claire, Chippewa, Rusk, and Dunn Counties. o13-60.
Occurrence of Marine Shells on Indian Sites in Wisconsin o12-53.
An Ornamented Stone Axe o9-49.
Orra L. Hollister n23-129.
Other Spirit Springs n7-215.
Petroglyphs at the Mouth of Lemonweir River n17-75.
Pierced Tablets or Gorgets in the W. H. Ellsworth Collection at Milwaukee o1-37.
Pike Lake n6-41.
Pine, Beaver and North Lakes n10-7,
The Pipe of Peace Ceremony Passes n25-97.
Pottery Smoothers n9-171.
The Preservation of Archaeological and Historical Sites in Ohio o19-16.
Preservation of Indian Memorials o20-149.
The Preservation of the Man Mound o7-139.
Publius V. Lawson o20-13.
The Recent Achievements of the Wisconsin Archaeological Society o5-182.
A Record of Wisconsin Antiquities o5-289.
Reuben Gold Thwaites o12-93.
Rock Lake Mound Group n8-35.
Saskatchewan Dust-Bowl Artifacts n19-14.
The Silver Anniversary Celebration n5-47.
Silver Trade Crosses o9-104.
Some Lapham Letters n16-85.
Some Little-Known Wisconsin Implements o9-15.
Some Village and Camp Sites in Northern Michigan n9-180..
The State Fair Exhibit of the Wisconsin Archaeological Society o5-201.
The State Field Assembly at Madison o9-57.
The State Landmarks Assembly at Prairie du Chien, September 29-30, 1911 o10-105.
Stone Adzes n31-91.
Stone Celts o18-7.
Stone Gouges o20-83.
Stone Pestles and Mortars n3-7.
Stone Spades and Hoes n2-165.
Stone Spud o2-15.
Suggestions in Regard to Archaeological Research in Wisconsin o6-70.
Toothed Shank Copper Spearpoint n18-77.
Triangular Arrowpoints n19-59.
"Turkey-Tail" Points n9-99.
Undescribed Groups of Lake Mendota Mounds o11-7.
The Unveiling of Tablets on the Observatory Hill Mounds o13-90.

The Use of Earthenware Vessels by the Old Northwest Indians n8-69.
Waukesha County, northern townships n2-7.
Waukesha County, southern townships n2-69.
West Point Marker o13-101.
William Ellery Leonard, an Appreciation n25-135.
Winnebago as Builders of Wisconsin Earthworks o10-124.
Wisconsin Catlinite Quarry o13-80.
Wisconsin Garden Beds o8-97.
Wisconsin Indian Medals o13-28.
Wisconsin Landmarks o12-98.
Wisconsin Museums, 1941 n22-45.
Wisconsin Spirit Stones o7-165.

BROWN, DOROTHY MOULDING
Fire Myths and Legends n20-84.
Indian Lover's Leaps in Wisconsin n17-84.
Indian Tree Myths and Legends s19-30.
Indian Winter Legends n22-49.
Legends of Wisconsin Hills n18-17.
Legends of Wisconsin Rocks n19-7.
Legends of Wisconsin Springs n18-79.
Myths and Legends of Wisconsin Waterfalls n18-110.
Rain Legends and Beliefs n24-27.
Water Monsters Inhabited Lakes and Streams of Wisconsin n17-27.
Wisconsin Indian Cave Legends n18-59.
Wisconsin Indian Corn Orign Myths n21-19.

BROWN, LORRAINE C.
The Wisconsin Tercentenary n13-81.

BROWN, TAGGART
Dr. J. J. Davis n17-25.
Wisconsin Indian Land Cessions n16-53.

BROWN, THEODORE T.
An Abraham Lincoln Indian Medal n8-103.
The Dickson Mound Builders' Tomb n8-29.
Indian Village and Camp Sites of the Lower Rock River in Wisconsin n9-7.
Lake Geneva and Lake Como n7-129.
Lake Monona Wild Life Sanctuary Association Field Meeting n6-110.
Plant Games and Toys of Chippewa Children n9-185.
Sieur Charles de Langlade n11-143.
Some Curious Uses of Indian Mounds n3-98.

BRUDER, EDGAR G.
Mayville Indian Rock Paintings n30-73.
The Springdale Mounds n34-165.
Archeological Remains in Northeastern Dodge County n34-181.
Dodge County Effigy Mounds n35-77.
Salvage Operations at the Kolterman Mound Group n36-3.
Prehistoric Earthworks in Devils Lake State Park n36-12.
The Drummond-Schumberg Effigy Mound Group — Dodge Co. n36-57.
The Oak Grove Effigy Mounds — Dodge County n37-75.
Prehistoric Earth Works in Iowa County n37-135.

BUBBERT, WALTER
Black Hawk Trail Study Asked n25-96.
Hoard Mounds Threatened n24-72.

Monona Mound Saved n25-5.
1945 Legislative Session n26-58.
Saving the Lasley Point Mounds n19-42.
Some Indian Myths about Iron n22-9.
BUCK, DEWEY and WILSON, WILLIAM H.
The Hanson Petroglyphs, Vernon County, Wisconsin n41-98.
BUCKSTAFF, RALPH N.
Cache of Ohio Chert Dicks n17-43.
Chief Oshkash Relics n19-69.
Indian Bone Implements in the Oshkosh Public Museum n23-21.
Indian Shell Work in the Oshkosh Museum n23-28.
Painted and Incised Pottery Fragments of the Winnebagos n22-84.
Painted Pottery of the Winnebago Culture n19-1.
Serrated Shells of the Winnebago n20-23.
BUELL, IRA M.
Beloit Mound Groups o18-119.
Wisconsin Cup Stone o12-21.
BULLOCK, HAROLD R.
Kannenberg's Work at the Lasley Point Site n26-50.
Lasley Point Mound Cruising n23-32.
Lasley Point Mound Excavations n23-37.
Lasley Point Mounds n21-29.
BURCAW, ELLIS
Bedora Mound Group of Oconto n32-74.
Killed by an Arrow n38-58.
BURT, MYRA E.
The Buffalo in Wisconsin n16-70.
BUTTLES, LEWIS S.
The Destruction of Mounds in Certain Southern States 13-94.
The Lapham-Wisconsin Centennial n16-30.
CARTER, B. F.
The Weaving Technic of Winnebago Bags n12-33.
CASAGRANDE, JOSEPH B.
John Mink, Ojibwa Informant n36-106.
CHIPMAN, KARYL
Indian Mounds in Wisconsin State Parks n15-1.
COLE, H. E.
Adams County o18-43.
Archaeological Researchese in the Upper Baraboo Valey o12-41.
Burial of White Feather n5-29.
The Marking of the Lynx Mound at Devils Lake o20-96.
Summary of the Archaeology of Western Sauk County n1-81.
Three Unfinished pipes n1-57.
COLLIE, GEORGE L.
Aboriginal Discrimination in the Selection of Materials for Tools o7-125.
Comparison Between an Aurignacian and a Magdalenian Necklace from the Dordogne District of France n5-58.
The Field of the Small Museum o8-93.
Researches in Wood and Portage Counties o11-39.
COLLINS, NEWELL E.
Perforated Indian Skulls n24-49.
COOKE, LESLIE L.
What are You Going to do with Your Collection of Relics? n22-59.

CRAUN, VICTOR S.
Big Eagle Cave Mystery n18-55.
CROSBY, HENRY A.
The Triangular Stone Adze o2-91.
CUTLER, HUGH C.
Report on Dietz Site, Dane County, Wis. n37-1.
DAIFUKU, HIROSHI
Burial Complex of the Reigh Site, Winnebago Co. Wis. n35-1 n38-244.
DELAVAN, WAYNE
Kansas' Archaeological Survey n20-9.
What Will Become of Your Collection? n20-6.
DIETZ, E. F.
Report on the Dietz Site, Dane County, Wis. n37-1.
Early Man in Wisconsin and Subsoil Archeology n37-33.
DIXON, GEORGE I. J.
Bigelow - Hamilton Site "I" n37-65.
DOERFLINGER, CHARLES H.
Franco-American Study of a Waning Prehistoric Industry o9-35.
DOUGLASS, JOHN M.
Cultural Changes among the Wisconsin Indian Tribes during the French Contact Period n30-1.
Fond du Lac County Gravel Pit Burial n28-43.
Prehistoric Tragedy in Grant County n28-45.
Textile Imprints on Wisconsin Indian Pottery n27-71.
DREXEL, LEOPOLD E.
Cassville Mounds and Sites o15-193.
Fox Lake o20-111.
DUCHAINE, WM. J.
Isle Royale National Park n15-12.
ELDER, ROBERT A.
Extension of the Ioway Focus n16-60.
ELLIS, FRANK E.
Indian Cave Habitations at Maquoketa, Iowa n6-61.
ELLIS, H. HOLMES
Cache of Flint Disks in Wisconsin n22-3.
The Lithic Laboratory n20-75.
ERDMAN, WILTON E.
Display Classifications n22-54.
General Aspects of Field Research for Surface Finds n22-27.
Indian Mounds at Horicon and Vicinity n17-55.
Prehistoric Specialization n14-15.
Record Suggestions for the Archaeologist n11-124.
"There Is No Good Indian But a Dead Indian" n14-97.
ERLANDSON, W. J.
Restoration at Aztalan n34-210.
FALGE, LOUIS
Indian Remains in Manitowoc County o14-121.
FARVOUR, FRANKLIN B.
The Radke Area of the Radke-Dunham Site, Winnebago Co. n38-5.
An Effigy Mound at Rush Lake n39-130.
A Segmented, Circular Fire Pit on the Dunham Area of the Radke-Dunham Site (Wn2) n40-121.
FAULKNER, CHARLES H.
The Red Ochre Culture: An Early Burial Complex in Northern Indian n41-35.

FERRY, ROBERT P.
Present Condition of Aztalan n11-108.
FISH, H. C.
A Mandan Village Site o7-122.
FISHER, ALTON K.
The Importance of Skeletal Remains in Wisconsin Archaeology n8-14.
Problems in Physical Anthropology in Wisconsin n19-50.
Rubbish n12-90.
The Vertebral Pathology of Prehistoric Wisconsin Indians n10-105.
FITCH, EDITH MEDBERY
Medicine Rock n18-35.
FLINT, A. S.
Archaeological Researches in the Upper Baraboo Valley o12-41.
FOUST, PENNY
Reigh Site Report, No. 3 n37-97.
FOX, GEORGE R.
Additions to the Record of Winnebago County Antiquities n1-61.
The Ancient Copper Workings on Isle Royle o10-73.
Archaeological Researches along the West Shore of Green Bay o11-125.
Effigy Mound Photographs o20-35.
Indian Remains on Washington Island o13-157.
Indian Remains in Waushara County o15-113.
Lake Shawano and the Wolf River o16-57.
"Lost" Effigy group o13-182.
MacGregor Bay Cemetery n10-61.
Marinette County o17-33.
Outagamie County Antiquities o15-1.
Stoneworks and Garden Beds in Winnebago County n1-47.
The Prehistoric Garden Beds of Wisconsin and Michigan and the Fox Indians n40-1.
FRACHTENBERG, LEO J.
Our Indebtedness to the American Indian o14-64.
FRECKMANN, KERMIT
Additional Pleasant Lake Mounds n15-74.
Charles E. Brown n27-22.
Hagner Indian Mounds n23-1.
Mounds on Pleasant Lake n12-111.
Waubeka Indian Mound Group n28-63.
Joedicke Bird Mounds n36-103.
FREEMAN, JOAN
Late Woodland Pottery in Wisconsin as seen from Aztalan n39-35.
GASTON, EDWARD PAGE
To Check Vandalism in Arizona n14-43.
GEREND, ALPHONSE
Additions to the List of Wisconsin Aboriginal Pottery o4-19.
The Archaeological Features of Sheboygan County o1-61.
Potsherds from Lake Michigan Shore Sites in Wisconsin o4-3.
Sheboygan County o19-121.
GERTH, ARTHUR
Lake Poygan Indians n10-102.

GLASER, J. H.
An Archaeological Reconnaissance in Northeastern Wisconsin o11-107.
GREENWALD, MARTIN
Reigh Site Report No. 3 n37-97.
GREGORY, JOHN GOADBY
Charles Edward Brown, Early Milwaukee Background n25-42.
Museum Origins in Milwaukee n12-54.
GRIFFIN, JAMES B.
Climatic Change — a Contributing Cause of the Growth and Decline of Northern Hopewellian Culture n41-21.
GUENTZEL, RALPH
Large Native Copper Knives n13-32.
GUTH, ALEXANDER CARL
Archaeologist, Antiquarian and Company n18-10.
Historic American Building Survey n18-121.
GUTHE, CARL E.
Archaeological Surveys n11-57.
The Ceramic Repository for the Eastern United States at the University of Michigan under the Auspices of the National Research Council n8-20.
HALL, ROBERT
Discovery of an Indian Rock Shelter in Brown County n25-90.
A Preliminary Report on the Iroquois Aspect in Wisconsin n28-34.
Wax and Fiber Process of Pottery Restoration at the Neville Public Museum n25-16.
Commentary on Carcajou Carbon-14 Dates n39-174.
HALPIN, ROBERT B.
Wood and Juneau County Mound Groups n-17-88.
HAMILTON, HENRY P.
Copper Implement o1-55.
HARTMAN, LILLIAN D.
Life and Customs of the Navajo Women n18-100.
HARTMAN, ROBERT B.
Alaska Another "Melting Pot" n21-39.
Costumes of the North American Indians n18-1.
Indian Life Today n20-14.
Milwaukee Hobby Show n19-95.
Totem Poles and Totemism n19-17.
HASKINS, STANLEY G.
Remains of Aboriginal Occupation in Pewaukee Township, Waukesha County o8-81.
HAWKINS, LUCY ROGERS
Chippewa Indian Idol n6-83.
HEMINGWAY, ESTHER
Museum Exhibits n25-98.
HENNING, WALTER
Upper Mississippi Pottery from Lake Poygan in Waushara Co. n39-149.
HILGER, SISTER M. INEZ
In the Early Days of Wisconsin—an Amalgamation of Chippewa and European Cultures n16-32.
Naming a Chippewa Indian Child n39-120.
HILL, JASPER
Agriculture, Hunting, Fishing n15-21.

HINSDALE, W. B.
Indian Overland Travelways n9-114.
Perforated Skulls, an Inquiry n14-37.
HOLAND, HJALMAR R.
Identification of Some Outagamie Villages n13-71.
HOLLISTER, ORRA L.
Notes on the Mitchell Park Site n14-21.
HOLSTEN, WALTER
Copper Spearpoint n18-73.
HORTON, RICHARD
An Engraved Marine Shell Gorget in Wisconsin n41-69.
HOTTON, J. SIDNEY
The Educational Objective and Business Side of the Geneva Lake Centennial Celebration n11-55.
HOUGHTON, FREDERICK
A Traveling Anthropological Exhibit for Schools o5-197.
HRUSKA, ROBERT J.
A Socketed Copper Harpoon n37-50.
HULBURT, MILTON F.
Card Index Method for Recording Archeological Surveys n11-68.
Copper Spearpoints from Reedsburg, Wisconsin Dells n13-15.
The Reedsburg Cache n8-18.
Report of Survey Work in Sauk County n11-67.
Some Village and Camp Sites in Northern Michigan n9-180.
INGS, MARVEL Y.
The Geological Museum n20-81.
IVEY, ZIDA C.
Dwight Foster Historical Museum n17-67.
Hoard Mounds Saved n25-4.
The Lawton and Lee Collections of the Fort Atkinson Museum n21-14.
Purchase of Hoard Golf Course Would Preserve Indian Mounds n24-73.
JACOBS, RAY
Battle of Kings Mountain Anniversary Celebration n9-187.
JAMISON, JAMES K.
Red Metal n10-69.
JENKINS, JOHN W.
Madison Chapter Report n34-175.
JENKINS, PAUL B.
American Indian Cross-Bow n8-132.
The Geneva Lake Centennial n11-44
JESKE, JOHN A.
Recent Interesting Finds Near Kingston n1-24.
JIPSON, N. W.
Winnebago Villages and Chieftains of the Lower Rock River Region n2-125.
JOHNSON, THORLEY
The Armstrong Site — an Upper Mississippi Site at Pepin, Wisconsin n30-79.
JOHNSTON, GEORGE
Pipe Stems n1-62.
JONES, ROBERT R.
Archaeological Excavations in Polk, Barron, and Rusk Counties n29-1.
KAHQUADOS, SIMON
The Nation of the Three Fires o18-109.

KANNENBERG, ARTHUR P.
Ancient Winnebago Use of Birds as Food n25-95.
Butte des Morts Explorations, 1935-36 n18-42.
Indian Medals in the Oshkosh Public Museum n16-97.
Indian Spirit Tree and Spring n19-74.
Our Post War Program for Wisconsin Archaeological Parks n25-1.
Spoons and Dippers—Prehistoric Winnebago Culture Pottery n19-21.
An Unusual Ceremonial Stone n23-30.
Winnebago County Indian Earthenware n8-124.
KELLOGG, LOUISE PHELPHS
Angel Decorah Dietz o18-103.
The Chicago-Milwaukee-Green Bay Trail n9-103.
The Contemporary Scene in Wisconsin n17-34.
The Fur trade in Wisconsin o17-55.
General George Rogers Clark on American Antiquities n7-44.
The Historic Brule n8-10.
The Mission of St. Marc n14-1.
The Stockaded Village n8-61.
KESLIN, RICHARD O.
A Preliminary Report of the Hahn and Horicon Sites, Dodge County, Wis. n39-4 (complete vol.)
KEYES, CHARLES R.
Grooved Axes of the Keokuk Type n10-129.
Some Methods and Results of the Iowa Archaeological Survey n8-135.
KING, BLANCHE BUSEY
Fluorspar Ornaments in the King Collection n16-25.
KING, FAIN WHITE
Kentucky's Ancient Copper Hoard n18-108.
KNUDSEN, JOHN J.
Archaeological Investigations in Wisconsin in 1935 n16-17.
KOUBA, T. F.
An Indian Figurine n35-49.
KRIBS, WILLIAM
A Stockbridge Indian Tale n7-228.
KUHM, HERBERT W.
Aboriginal Skin Dressing n19-76.
Aboriginal Uses of Shell n17-1.
American Indian in Painting and Sculpture n10-99.
American "Indians" by Adoption n-26-35.
Archaeological Formulae n15-47.
Art of the American Indian n12-21.
Decorative Uses of Shell n25-112.
Folsom Point Controversy n14-27.
Fraudulent Artifacts n15-53.
The Indians of Virginia n11-91.
Isle Royale National Park n15-12.
Wisconsin Indian Fishing—Primitive and Modern n7-61.
Indian Place-Names in Wisconsin Vol. 33, No. 1-2
KUHM, JORDYCE A.
Wisconsin Indian Drums and Their Uses n27-81.
LAIDLAW, GEORGE E.
Additional Knobbed Stone Implements o12-96.
Geographical Distribution of Certain Knobbed Stone Implements o12-23.
Ojibwa Myths and Tales n1-28.

LAPHAM, JULIA A.
Dr. Philo Romayne Hoy o1-85.
George P. Delaplaine o2-100.
The History and Work of the Landmarks Committee in Wisconsin o5-177.
Moses Strong o2-4.
LAPHAM, MARY J.
Dr. Increase A. Lapham o1-32.
LAWSON, PUBLIUS V.
Ancient Cairns and Stone Circles in Winnebago County. o2-28.
The Ancient City of Aztalan o19-7.
Clam Eaters and Their Shell Heaps in Winnebago County o2-6.
The Great Serpent Mounds at Menasha o1-35.
A List of the Aboriginal Earthenware in Wisconsin Collections o1-96.
The Occurrence of Obsidian Implements in Wisconsin o2-95.
The Potawatomi o19-41.
Summary of the Archaeology of Winnebago County, Wisconsin o2-40.
The Trade Beads of Wisconsin o7-116.
A Village of Clam Eaters n24-21.
The Winnebago Tribe o6-78.
LEMERE, OLIVER
Winnebago Legends n1-66.
The Young Hunter's Blessing o20-94.
LEWIS, T. M. N.
A Florida Burial Mound n10-123.
Kentucky's "Ancient Buried City" n13-25.
"Old Kentucky" n11-41.
Mound Group Opposite Aztalan n35-37.
LINCK, ROBERT
Discovery of an Indian Rockshelter in Brown County n25-90.
LOCKE, JOHN
Earthwork Antiquities in Wiskonsin Territory n11-20.
LOOKAROUND, PHEBE J.
A Menominee Indian Concept of Conservation n16-105.
Reginald Oshkosh n16-100.
LUCIUS, JOSEPH
The Blue Springs n22-7.
LUNDSTED, JAMES E.
Burial Complex of the Reigh Site, Winnebago County, Wis. n35-1 n38-244.
LUNDSTED, EDWARD
Reigh Site Report, No. 3 n37-97.
MAHER, ROBERT
The Aztalan Lithic Complex n39-5.
The Excavation and Reconstruction of the Southwest Pyramidal Mound at Aztalan n39-77.
Six Mile Creek — A Non-Pottery Site on Lake Mendota n40-19.
The Totten Site — A Possible Non-Pottery Site in Walworth County n40-116.
MANSFIELD, HIRAM ELDON
The "Cairn" at Lasley's Point n23-45.
MARSH, MARY E.
Mihi Shrines n17-93.

MARTIN, MARION E.
The Erin Cache n22-5.
MARTIN, PAUL S.
Archaeological Survey of Illinois n6-56.
MAXWELL, MOREAU S.
A Summary of Illinois Archaeology n28-19.
McKERN, WILL C.
Archaeological Field Methods in Wisconsin n6-48.
Aztalan n27-41.
Buffalo Lake Mound Explorations n6-75.
The George A. West Pipe Monograph n14-31.
Hopewell and Cahokia Cultures in Wisconsin n9-160.
The Hopewellian Peoples n27-1.
The Importance of Pottery in Wisconsin Archaeology n8-26.
The Middle Mississippi Peoples n27-25.
Practical Tips on Collecting and Surveying n30-55.
Recent Side-Lights on Aztalan n22-79.
Trait List of the Effigy Mound Aspect n30-39.
Trait List of the Prehistoric Wisconsin Cultures n26-66.
A Unique Copper Specimen n28-72.
An Unusual Type of Copper Knife n10-111.
The Upper Mississippi Peoples n27-10.
Wisconsin Archaeology in the Light of Recent Finds in Other Areas n20-1.
Ringeisen Collection of Fluted Axes n36-25.
Some Varieties of Groved Axes in the Woodland Area n37-46.
McLACHLEN, W. G.
The Lake Kegonsa Region n4-181.
The Mounds of the Lake Waubesa Region o12-107.
MEYER, HEINZ
Reigh Site Report, No. 3 n37-97.
MILLER, TOWNE L.
Explorations of Mounds at Kingston n1-22.
Report of the State Archaelogical Survey Commission for Season of 1931 n11-61.
Trempealeau, Vernon, and Crawford County Notes o11-86.
MOORE, G. R.
Cache of Copper Chisels n1-21.
MOOREHEAD, WARREN K.
Commercial vs. Scientific Collecting o2-93.
A Forgotten Tree Ring Record n14-45.
The Hopewell People n9-106.
Indian Stone Cutting Tools n6-88.
Preservation of the Cahokia Mounds n1-25.
The Progress of Archaeological Science in Wisconsin o7-109.
MUELLER, THEODORE
Dr. Francis Huebschmann, Indian Agent n25-20.
The Social Significance of Our Legends and Folklore n25-136.
NEIHOFF, ARTHUR
Otoliths as Ornaments n33-223.
A Milwaukee County Gravel Pit Burial n34-122.
Excavations at Prawatschke Mounds, Dodge County n37-58.
A Brachycephalic Cranium from Brookfield, Milwaukee Co. n37-73.
A Prawatschke Mound Group, a Woodland Burial Complex n37-87.

A Fluted Hammer n38-41.
A Red Ochre Burial in Ozaukee County n39-115.
Beads from a Red Ochre Burial in Ozaukee County n40-25.
NELSON, ELMER R.
Guide to the Rocks and Minerals Used by Prehistoric Indians in the Wisconsin Area n25-76.
NERO, ROBERT
Primary Flake Implement n29-23
Surface Indications of a Possible Early Archaic Site in Wisconsin n36-128.
Report on the Dietz Site, Dane County, Wis. n37-1.
NESBITT, PAUL H.
Black-on-White Pottery from the Mimbres Valley, New Mexico n11-82.
NEUENSCHWANDER, HERBERT E.
Indian Trails and Villages of Dodge County, 1834-1837 n39-127.
NEWMAN, DORIS
Eulrich Garden Beds County Park Project n15-19.
NICHOLS, PHEBE JEWELL
Brief Explanation of "Medicine" n21-35.
NICHOLS, P. G.
Archaeological Remains in Kanabec County, Minnesota n6-64.
OESTREICH, NANCY
Butterflies and the American Indian n24-1.
Cultural Change Among the Wisconsin Winnebago n25-119.
Trends of Change in Patterns of Child Care and Training Among the Wisconsin Winnebago n29-39.
OLIVER, JOHN W.
Wisconsin's War History Commission o17-46.
OSTBERG, NEIL
Additional Material from the Reigh Site, Winnebago Co. n37-28.
Reigh Site Report No. 3 n37-97.
OTTO, IRAN T.
Exceptional Wisconsin Pot n12-89.
OVERTON, GEORGE
An Ancient Village Site in Winnebago County n8-94.
The Hidden Story of the Grand Butte des Morts n11-111.
Indian Laws n24-43.
Old Beach Camp Sites in Winnebago County n10-54.
The Sacred Springs of the Lake Poygan Region n7-211.
Silver Ornaments from Grant Butte n10-91.
Some Odd Indian Tools n12-128.
Trade Goods Grignon - Porlier Post n21-71.
What a Season Brings Forth n11-157.
PARMALEE, PAUL W.
Animal Remains from the Aztalan Site, Jefferson Co. n41-1.
Animal Remains from the Durst Rockshelter, Sauk Co., Wis. n41-11.
PARSONS, LEE A.
Unique Display of Skeleton at Lizard Mound State Park n41-53.
Another Indian Burial from Milwaukee n41-71.
PASCO, GEORGE L.
Copper Discs in Wisconsin n30-51, 63.
Explorations in Western Green Lake County n11-100.
Unique Copper Specimen n28-72.

PEET, STEPHEN D.
The Present Condition of Mound Exploration in Wisconsin o1-6.
PERINO, GREGORY
The Glosemeyer Mound Group, Warren Co., Mo. n39-144.
The Kraske Village Site and Mound Group n39-181.
PERKINS, EDWARD C.
The Vonburn Mounds Near Prairie du Sac o1-93.
PHILLIPS, GEORGE BRINTON
Analysis of Ancient Sinhalese Metal n3-133.
A Bronze Mirror from Carthage n5-32.
A Prehistoric Copper Mine n2-151.
POND, ALONZO W.
The Cave of the Mounds—a Subterranean Museum n21-45.
Cave and Rock Shelters of France n3-14.
Report of Preliminary Survey of Important Archaeological Discovery at Mammoth Cave, Ky. n15-27.
Suggestions on Technique in Archaeology n10-45.
Wisconsin Joins Ranks of Oldest Inhabited Areas in America n17-51.
PORTER, A. H.
Aboriginal Evideices in Washburn County o4-35.
PORTER, JAMES WARREN
Archeological Dating Methods n36-69.
Petrographic Analysis of Eight Aztalan Celts n39-26.
PORTER, ROLLAND L.
Aboriginal Evidences in Washburn County o4-35. o2-8.
The Cutler Mounds at Waukesha o1-41.
PORTER, V. C.
Visit to Aztalan in 1838 o19-18.
QUICKERT, CARL
Unique Indian Flint Collection n26-82.
QUIMBY, GEORGE I.
An Old Copper Site ? at Port Washington, Wis. n38-1.
An Old Copper Site at Menominee, Mich. n38-37.
Lake Archaic Culture and the Algoma Beach in the Lake Michigan Basin n39-175.
QUIN, JAMES
Killed by an Arrow n38-58.
READ, WILLIAM F.
High Cliff Mounds n28-1.
REAGAN, ALBERT B.
Ancient Cities of Northeastern Arizona n9-188.
Ancient Utah People Seem to Have Believed that Snakes Evolved from an Animal n15-44.
Archaeological Finds in the Uintah Basin in Utah n11-162.
Archaeological Notes on the Brush Creek Region, Northeastern Utah n10-132; n15-23.
The Bear Dance of the Ouray Utes n9-148.
The Bois Fort Chippewa n3-101.
Indian Folktales n7-227.
Mounds, etc., in the Nett Lake-Rainy Lake Country of Minnesota n7-221.
Picture Writings of the Chippewa Indians n6-80.
Plants Used by the Bois Fort Chippewa (Ojibwa) Indians of Minnesota n7-230.

Plants Used by the White Mountain Apache Indians of Arizona n8-143.
Rainy Lakes Indians n2-140.
The Society of Dreamers and the O-Ge-Che-Dah, or Head-Men Dance of the Bois Fort (Ojibwe) Indians of Nett Lake, Minnesota n13-35.

RED CLOUD, MITCHELL
Chief Blackhawk n26-80.

REISINGER, M. E.
The Serpent Effigy on Medicine Butte n14-23.

RENAULT, DORIS
Bogus Indian Relics n16-7.

RICE, MARY A.
An Outdoor Museum, Clintonville n16-28.

RINGEISEN, JOS. (JR.)
Birdstones of North America n11-33.
Broken Perforations on Birdstones n30-53.

RITZENTHALER, ROBERT
Chippewa Indian Method of Securing and Tanning Deerskin n28-6.
Copper Discs in Wisconsin n30-51, 63.
Evidence of the Ancestors of the Chiwere Sioux on the Outskirts of Milwaukee n27-89.
Guide to the Rocks and Minerals Used by Prehistoric Indians in the Wisconsin Area n25-76.
The Hopewellian Peoples n27-1.
The Impact of War on an Indian Community n25-10.
Juneau County Petroglyphs n28-51.
Middle Mississippi Peoples n27-25.
Osceola Site—an "Old Copper" Site Near Potosi, Wisconsin n27-53.
Tie-ups Between Prehistoric Cultures and Historic Indian Tribes in Wisconsin n30-36.
Trait List of the Effigy Mound Aspect n30-39.
Trait List of the Prehistoric Wisconsin Cultures n26-66.
The Upper Mississippi Peoples n27-10.
Vilas County Serpent Mound n28-54.
The Wisconsin Oneida Wake n22-1.
The Oconto Site—An Old Copper Manifestation n33-199.
Copper Pendants—Similarity between Copper Pendants from Wisconsin and Georgia n33-225.
Buffalo County Petroglyph n34-207.
Woodland Pot from Dodge County n35-54.
Indians in an Urban Situation n36-147.
Some Varieties of Grooved Axes in the Woodland Area n37-46.
Reigh Site Report, No. 3 n37-97.
Old Copper Culture of Wisconsin (n38-No. 4, complete issue)
The Osceola Site—An Old Copper Site near Potosi, Wis. n38-186.
The Oconto Site—An Old Copper Manifestation n38-222.
Old Copper Complex, an Archaic Manifestation n38-311.
A Red Ochre Burial in Ozaukee County n39-115.
Upper Mississippi Pottery from Lake Poygan, Waushara Co. n39-149.
Old Copper Specimens from Upper Michigan n39-151.
Some Carbon-14 Dates for Wisconsin Old Copper Culture n35-81 n39-173.

Possible Evidence of a Mat-Wrapped Burial in Wisconsin n39- 180.
An "Old Copper" Crescent from Alberta, Canada n41-34.
Radio Carbon Dates for Wisconsin n41-65.
ROBINSON, C. H.
Banner or Ceremonial Stones o7-134.
ROGERS, MALCOLM J.
Prehistoric Turquois Mines n8-100.
ROWE, CHANDLER W.
Report on Heller Mound Group n34-144.
The Use of Earth Moving Machinery at Aztalan n36-63.
Testing Operations at the Ox-Bow Site. n37-131.
A Crematorium at Aztalan n39-101.
RUEPING, HENRY J.
Fond du Lac Indian Memories n25-126.
Fond du Lac Gravel Pit Burial n25-13.
A Platform Pipe n26-44.
RUST, WILLIAM C.
Eccentric Flints n21-3.
RUYLE, JOHN B.
McKern Greeting n25-22.
SANFORD, ALBERT H.
Comments on the Discoidal n12-86.
Disk Pipe o13-103.
The Exploration of Mounds in White's Group in Vernon County o12-30.
Non-Professional Archaeologist n10-139.
A Pot from Panama n13-98.
SCHOEWE, CHARLES G.
Dedicating the Wapuka Site n14-89.
Uses of Wood and Bark Among the Wisconsin Indians n11-148.
A Wisconsin Bird-Stone n10-114.
SCHOEWE, W. H.
Geology of Artifacts n25-89.
SCHUG, ERNEST
Reigh Site Report, No. 3 n37-97.
SCHUMACHER, J. P.
Aboriginal Remains of the Upper Wisconsin Valley o12-75.
An Archaeological Reconnaissance in Northeastern Wisconsin o11-107.
Indian Remains in Door County o16-125.
Survey of Some Antiquities in Portage County o12-87.
SCRIBNER, PATRICIA
Bigelow-Hamilton Site "I" n37-65.
SELLERS, MARY
Indians in an Urban Situation n36-147.
SHEPARD, DANIEL
Indian Folktales n7-226
SHETRONE, HENRY CLYDE
The Mound-Builders n10-80.
SHUTTLEWORTH, RUTH J.
New Wisconsin Museums n19-25.
The Restoration of an Effigy Mound n13-84.
SILVERBERG, JAMES
The Kickapoo Indians — First 100 Years of White Contact in Wisconsin n38-61.

SKAVLEM, HALVOR L.
The Archaeology of the Lake Koshkonong Region o7-47.
Indian Hill Mounds o13-93.
Indian Implement Manufacture n9-177.
Notes on Some Archaeological Features of Eau Claire, Chippewa, Rusk, and Dunn Counties o13-60.
Popplow Cache o13-105.
SKINNER, ALANSON
Collecting Among the Menomini n3-135.
John Valentine Satterlee o19-209.
Recent Mound Explorations in Shawano County o18-105.
Recollections of an Ethnologist Among the Menomini Indians o20-41.
Sauk War Bundles n2-148.
Some Menomini Indian Place Names in Wisconsin o18-97.
A Trip to the Potowatomi n3-143.
SMITH, EDSON
Suggestions of Mexico in the Mound Relics o8-65.
SMITH, FRANK R.
Notes of the Four Lakes Indians o9-115.
SMITH, HARLAN I.
Andrew Ellicot Douglass o1-42.
Anthropology at Pittsburgh o1-100.
Archaeological Materials from Wisconsin in the American Museum of Natural History o6-20.
Archaeological Work in Wyoming o7-119.
Methods of Collecting Anthropologic Material o1-89.
SMITH, LINCOLN
Effigy Mounds in Richland County n34-168.
SMYTHE, H. A.
Adams County o18-43.
SOHRWEIDE, ANTON W.
A New Problematical Artifact n14-39.
The Origin and Distribution of Copper Artifacts n11-153.
The Watertown Village Site n5-51.
Wisconsin Shell Beads n8-32.
SOMERS, A. N.
Prehistoric Cannibalism in America o19-20.
SPAULDING, ALBERT C.
Eskimo at the Reigh Site n38-30.
SQUIER, GEORGE H.
Archaeological Resources of Western Wisconsin o13-121.
Certain Archaeological Features of Western Wisconsin o4-25.
STARR, FREDERICK
Crude Stone Implements from the Congo Free State o7-11.
STEINBRING, JOHN H.
The Radke Area of the Radke-Dunham Site, Winnebago Co. n38-5.
An Effigy Mound at Rush Lake n39-130.
A Segmented, Circular Fire Pit on the Dunham Area of the Radke-Dunham Site (Wn 2) n40-121.
STERLING, WILLIAM T.
A Visit to Aztalan in 1838 o19-18.
STEWARD, JULIAN H.
Petroglyphs and Pictographs n9-123.
STEWART, MARY E.
Sponge Divers Ceremony n7-117.

STOUT, A. B.
The Archaeology of the Lake Koshkonong Region o7-47.
Summary of the Archaeology of Eastern Sauk County o5-230.
The Winnebago and the Mounds o9-101.
STOWE, GERALD C.
Archaeological History of Douglas County, Wisconsin n23-89.
Butte des Morts Explorations 1935-36 n18-42.
An Enigmatic Copper Artifact n19-37.
Plants Used by the Chippewa n21-8.
Stone Disc n17-9.
STURTEVANT, GENE
Dream Dance Drum n13-86.
SUGDEN, EARL
Folsomoid Points in Richland County n35-79.
TAGATZ, E. C.
Indian Remains in Waushara County o15-113.
TAYLOR, RICHARD C.
Notes Respecting Certain Indian Mounds and Earthworks, in the Form of Animal Effigies, Chiefly in the Wisconsin Territory, U. S. n11-1.
TAYLOR, VICTOR S.
Superstitions and their Derivations n17-62.
THOMSON, M. S.
Two Bone Implements from Sheboygan n10-121.
An Unusual Spirit Stone n13-18.
THORNE, G. M.
Illinois State Archaeological Society n17-90.
THRUSTON, G. P.
Tennessee Archaeology at St. Louis—The Thruston Exhibit o3-133.
TITTERINGTON, P. F.
Cahokia Mound Group and its Surface Material n13-7.
TITUS, WILLIAM A.
Aboriginal Remains of the Upper Wisconsin Valley o12-75.
The Cliff Ruins of the Southwest n3-82.
A Copper Banner Stone o15-198.
The Fond du Lac Cache of Copper Implements o13-97.
Fond du Lac County Antiquities o14-1.
Survey of Some Antiquities in Portage County o12-87.
TOMLINSON, FRANKLIN
Indian Mounds and Village Sites at Plum City n4-153.
Pierce County Trails n6-53.
TUTTLE, RALPH
Prehistoric Earthworks in Devils Lake State Park n36-12.
VANDENBURGH, MARY M.
Arts and Crafts of the American Indian n24-54.
Milwaukee's Midsummer Festival Indian Village, 1941 n22-15.
VAN ROYEN, WILLIAM
An Evaluation of Recent Nebraska Finds Sometimes Attributed to the Pleistocene n13-49.
WATERS, LOUISE N.
Kettle Moraine State Forest n19-4.
WATKINS, MARTHA B.
Indi-Eiken n19-56.
WEBB, CLARENCE H.
The Role of the Non-Professional in the Local Society n37-82.
WENZ, ARTHUR
The Marking of the State Fair Park Mounds o9-79.

WEST, GEORGE A.
The Aboriginal Pipes of Wisconsin o4-47.
The Antiquities of Egypt n7-7.
Chipped Flint Perforators of Wisconsin o8-37.
A Distinguished Members of the Wisconsin Archaeological Society, Dr. George Lucius Collie n11-77.
Fraudulent Aboriginal Pipes n15-49.
The Greater Copper Pike n12-31.
The Indian Authorship of Wisconsin Antiquities o6-169.
Pebble Net-Weights o7-131.
Pipestone Quarries in Barron County o9-31.
Platform Pipes from a Mound in Vernon County o7-34.
The Story of Aztalan n8-51.
Summary of the Archaeology of Racine County, Wisconsin o3-6.
Superimposed Aboriginal Implement n10-89.
Unusual Banner Stones n17-32.
Uses of Tobacco and the Calumet by Wisconsin Indians o10-5.
The Way to Get the Most out of Archaeology n14-91.
WHALEY, KIRK
Reigh Site Report, No. 3 n37-97.
WHEATON, HARRIET
The Dedication of the Fort Atkinson Intaglio o19-197.
WHITE, W. B.
Eighty Years After Lapham n12-48.
Report on the Outlet Site on Lake Monona n30-22.
WHITNEY, LEE R.
Archaeological Literature of Interest and Value to the Wisconsin Student o5-221.
WIEGAND, PHILLIP H.
A Native Copper Harpoon Point n36-22.
A Plea from Your President n40-268.
WIGHT, LOYAL O.
A Large Stone Pestle n15-41.
WILL, GEORGE H.
Progress in North Dakota n20-77.
WILSON, WILLIAM H. (with Dewey Buck)
The Hanson Petroglyphs, Vernon County n41-98.
WINCHELL, NEWTON H.
Habitations of the Sioux in Minnesota o7-155.
WINN, VETAL
A Cache of Copper Chisels n3-51.
Family Names of Civilized Indians n8-36.
Indian Mounds State Fair Park n22-19.
The Minocqua Lake Region n3-41.
Ornamented Copper of the Wisconsin Area n23-49.
Two Fluted Stone Implements n7-219.
Unusual Varieties of Common Types of Indian Implements n27-91, n28-14, 38, 57, 76.
WISSLER, CLARK
Archaeology as a Human Interest n8-119.
WITTRY, WARREN
Discovery of an Indian Rock Shelter in Brown County n25-90.
The Oconto Site—An Old Copper Manifestation n33-199.
A Unique Ceramic Effigy n35-53.
Salvage Operations at the Kolterman Mound Group n36-3.
Mendota Hills Bird Effigy Mound, Dane County n36-53.

Reigh Site Report, No. 3 n37-97.
Kolterman Mound 18 Radiocarbon Date n37-133.
Prehistoric Earthworks in Iowa County n37-135.
Preliminary Study of the Old Copper Complex n38-204.
The Oconto Site—An Old Copper Manifestation n38-222.
Old Copper Complex—An Archaic Manifestation n38-311.
Domestic Houses at Aztalan n39-62.
The Raddatz Rockshelter, Sk5, Wis. n40-33.
The Wakanda Park Mound Group, Dn1, Menominie, Wis. n40-95.
Archeological Studies of Four Wisconsin Rockshelters n40-137.

WOJTA, J. F.
Visit to the Indian Sugar-Bush Ceremonials n11-172.
Wisconsin Indians in Farming n6-115.
Wisconsin Indians Learn Farming o18-19.

WOLFF, ELDON G.
Pottery Restoration n38-43.

WORTH, P. L.
New York Stone Pestles n10-74.

YOHN, MADGE
Indian Earthworks of the Four Lakes Region n18-14.

YOUNGER, HARVEY O.
Archaeological Researches Along the West Shore of Green Bay o11-125.
Lake Shawano and the Wolf River o16-57.
Marinette County o17-33.

ZANDER, HERMAN
Fiftieth Anniversary Banquet n34-179.

PART II

SUBJECT INDEX

Adams County o18-43.

Adze, copper n23-17.
Stone n13-91.
cache, Indian n19-112.
triangular o2-91.

Agriculture, hunting, fishing n15-21.

Alabama, urn burials n9-110.

Alaska, "Melting Pot" n21-39.

Algonkian artifacts o19-25.

American Anthropological Association
central section organized n1-58.
meeting, 1901 o1-100.
1925 n4-159.
1926 n5- 75.
1927 n6- 85.
1930 n9-152.

American Historical Association, endowment n5-90.

American Museums Association meeting, 1926 n5-88.

Anthropological exhibit, traveling, schools o5-197.

Anthropology, Pittsburgh o1-100.
physical, problems n19-50.

Archaic Site
Possible Early Archaic Site in Wisconsin n36-128.

Archeological Notes n33-229.
Dating Methods n36-69.

Archaeology, bills o10-65.
Classifications
card index n11-68.
display n22-54.
record suggestions n11-124.
field methods n6-48; n22-27.
formulae n15-47.
human interest n8-119.
literature for student o5-221.
radio n14-18.
relation to history o9-93.
technique, suggestions n10-45.
way to get most from n14-91.

Archaeologist, antiquarian & company n18-10.
non professional n10-139.

Arizona, ancient cities of northeastern n9-188.
plants used by White Mt. Apache Indians in n8-143.

Armstrong site, upper Mississippi site, Pepin, Wisconsin n30-79.

Arrowhead see Point

Art, American Indian n12-21; n24-54.
American Indian in painting & sculpture n10-99.

Artifacts, Algonkian o19-25.
copper n11-153; n16-31; n19-37.
corner-tang flint n16-62.
fraudulent n15-53.
geology of n25-89.
literature on Wisconsin n17-20.
Problematical n14-39.
Saskatchewan dust-bowl n19-14.

Axe, double-bitted o1-87.
grooved n10-129.
stone, barbed n9-139; n18-63.
fluted o1-13; n18-75; n21-1.
grooved o17-1.
ornamental o9-49.
Grooved axes, varieties of n37-46.
Fluted axes, Ringeisen Collection n36-25.
Aztalan o19-7; n8-51; n11-108; n22-79; n27-41.
conveyed to park system n1-25.
ownership deed n26-43.
recent excavations n12-74.
visit to o18-152; o19-18.
restoration n34-210.
mound group opposite Aztalan n35-37.
use of earth moving machinery at Aztalan n36-63.
exploration and reconstruction (Vol. 39, No. 1, compl. issue)
Aztalan revisited: an introduction n39-2.
Aztalan lithic complex n39-5.
petrographic analysis of eight Aztalan celts n39-26.
Late Woodland pottery as seen from Aztalan n39-35.
domestic houses at Aztalan n39-62.
excavation and reconstruction of the southwest pyramidal mound at Aztalan n39-77.
A crematorium at Aztalan n39-101.
animal remains from the Aztalan site n41-1.
Balls, stone n4-163.
Banner-stones o7-134; n17-32; n20-65.
ceremonials o10-145.
copper o15-198.
Minnesota n5-62.
Banquet, Fiftieth Aniversary n34-179.
Baraboo, archaeological research in Upper, Valley o12-41.
Barrett, Samuel A. n20-43.
Barron County n29-1.
Beads, trade, of Wisconsin o7-116.
Wisconsin Shell n8-32.
Beloit College mound group
A preliminary report n39-155.
Bigelow-Hamilton Site "I" n37-65.
Bird Mounds
Joedicke n36-103.
Bird-stone n10-114.... n11-33; n30-53.
ceremonials o8-5; o8-106; n24-17.
Black Hawk n26-80.
retreat in Dane County n24-61.
Boat-stone, distribution of discoidals, cones, plummets, in Wisconsin o8-139; n5-64.
Brown, Charles E. n25-42, 45, 55; n27-22.
Brown County, Indian rock shelter n25-90.
Brule, historic n8-10.
copper sources n9-122.
Buffalo in Wisconsin n16-70.
Buffalo County
petroglyphs n34-207.
Buffalo Society of Natural Sciences, traveling anthropological exhibit for schools o5-197.

Burials, gravel pit n3-65.
Fond du Lac Co. n25-13; n28-43.
red paint n21-74.
urn, Alabama n9-110.
mat-wrapped: possible evidence of n39-180.
Another Indian burial from Wisconsin n41-71.
Milwaukee County gravel pit burial n34-122.
Butte des Mortes, explorations, 1935-36 n18-42.
hidden story of n11-111.
silver ornaments from n10-91.
Cache, adze, stone, Indian n19-112.
copper chisels n1-21; n3-51.
implements n21-34.
Fond du Lac o13-97.
chert, Ohio n17-45.
disks, flint, Wisconsin n22-3.
Erin n22-5.
implement o6-47.
Popplow o13-105.
Reedsburg n8-18.
Tichigan n21-69.
Cahokia culture, Hopewell, Wisconsin n9-160.
Cairns, Lasley's Point n23-45.
Winnebago Co. o2-28.
California Pacific International Exposition, American Indian n15-82.
Cannibalism in America o19-20.
Carbon - 14 Dates
Carcajou site n39-174.
for Old Copper n35-81; n39-173.
Kolterman Mound 18, Carbon 14 dates n37-133.
Cassville site o15-193.
Catawba n5-93.
Cave dwellers, west Texas n18-25.
Caves, Big Eagles, mystery n18-55.
Cave of Mounds n21-45.
France n3-14.
Indian, Maquoketa, Iowa n6-61.
Wisconsin n5-7.
Mammoth, Kentucky n15-27.
Minn. and Iowa n5-24.
Celts, fluted handled n9-150.
stone o18-7.
Ceremonial stones, banner o7-134; o10-145.
bird-stone o8-5; o8-106; n24-17.
unusual n23-30.
Champlain Valley Archaeological Society n18-32.
Chippewa, amalgamation of cultures n16-32.
Bois Fort n3-101.
Head-men dance n13-35.
idol n6-83.
picture writing n6-80.
plant games n9-185.
plants used n7-230; n21-8.
tanning deerskin n28-6.
Mide Priest, reminiscences of n35-83.
Mide Priest's description of the medicine dance n41-77.

Chippewa County o13-60.
Chisels, cache of copper n1-21; n3-51 .
Clam eaters and shell heaps, Winnebago Co. o2-6.
village of n24-21.
Clark, Gen. Geo. Rogers, on American Antiquities n7-44.
Clarke, Willis P. n5-90.
Cliff ruins, southwest n3-82.
Cole, Harry E. n8-7.
Collecting, commercial vs. scientific o2-93.
methods, anthropologic material o1-89.
preservation, local archaeological data o2-102.
tips on, surveying n30-55.
Collections, copper implements, MPM o1-11.
Wis. o20-27.
Ellsworth, pierced gorgets o1-37.
Hall, Charles H. n6-59.
Indian flint n26-82.
King, fluorspar ornaments n16-25.
Lawton & Lee, Ft. Atkinson Museum n21-14.
Thruston o3-133.
Vogel, W. H., double-bitted axe o1-87.
West, aboriginal pipes o12-64.
What are you going to do with your, of relics n22-59.
What will become of your n20-6.
Collie, Geo. Lucius n11-77.
Colombian city, prehistoric n3-21.
Committee for codefying types of archaeological sites in Wisconsin, report n24-10.
Conchology, Archeo-, in the Union of Soviet Socialistic Republics n18-93.
Archeo- and Ethno- n17-13.
Cones, distribution in Wisconsin o18-139; n5-64.
Copper, adze n23-17.
artifacts n11-153; n16-31; n19-37.
banner stone o15-198.
Brule River sources n9-122.
chisels, cache n1-21; n3-51.
collection o20-27.
discs n30-51, 63.
harpoon points n7-50.
Implements o1-55; o3-49; n2-178; n10-72.
cache n21-34.
Fond du Lac o13-97.
MPM collection o1-11,
Wis. collection o20-27.
Isle Royale, workings o10-73.
Kentucky's ancient hoard n18-108.
knives n9-145; n10-111; n19-16.
Mine, prehistoric n2-151.
myths n20-35.
ornamented n23-35.
ornaments o3-101.
bird effigy n11-104.
Osceola site n27-53.
pike n5-66; n12-31.
pipe, Minn. n7-218.

spearpoints n18-73.
Reedsburg n13-15.
toothed shank n18-77.
spud, fluted n21-65.
unique n28-72.
Copper —
Oconto site n33-199; n38-222.
Carbon-14 dates for old copper n35-81.
Pendants—similarities between pendants from Wisconsin and Georgia n33-225.
Burial complex of the Reigh Site, Winnebago Co. n35-1. (See Reigh Site)
Native copper harpoon point n36-22.
Socketed copper harpoon n37-50.
Additional material from the Reigh Site, Winnebago Co. n37-28.
An Old Copper Site ? at Port Washington n38-1.
Reigh site report, No. 3 n37-97.
Six Old Copper implements from Long Lake, Florence Co. n38-35.
Old Copper site at Menominee, Michigan n38-37.
Preliminary study of the Old Copper complex n38-204.
Old Copper Complex—an archaic manifestation n38-311.
Old Copper culture of Wisconsin (Complete Issue — V38, No. 4)
Old Copper specimens from Upper Michigan n39-151.
Carbon 14 dates for Wisconsin Old Copper culture n39-173.
"Old Copper" crescent from Alberta, Canada n41-34.
Crawford County o11-86.
Cross, large silver n17-79.
silver trade n9-104.
Cross-bow, American Indian n8-132.
Cup stone, Wisconsin o12-21.
Dakota, cloth weaving n3-22.
Dance, bear, Ouray Utes n9-148.
Head-men, Bois Fort Chippewa of Nett Lake, Minn. n13-35.
Dane County, Wis.
Airport village site n34-149.
Mendota Hills bird effigy mound n36-53.
Report on Dietz site n37-1.
Davis, J. J. n17-25.
Delaplaine, George P. o2-100.
Devils Lake State Park
Prehistoric earthworks n36-12.
Dietz, Angel Decorah o18-103.
Dietz site n37-1.
Discoidals n12-86.
distribution in Wisconsin o8-139; n5-64.
Disks, cache, flint, Wisconsin n22-3.
Ohio chert n17-45.
copper, Wisconsin n30-51; n30-63.
stone n17-9.
Dodge County, Wis.
archeological remains n34-181.
effigy mounds n35-77.

Drummond-Schaumberg effigy mound group n36-57.
excavations at Prawatschke mound group n37-58.
Oak Grove effigy mounds n37-75.
a preliminary report of the Hahn and Horicon sites (Vol. 39, No. 4--complete issue)
woodland pot n35-54.
Indian trails and villages—1834-1837 n39-127.
Door County o16-125.
Douglas County n23-89.
Douglass, Andrew Ellicott o1-42.
Drills, reamers, Indian n24-25.
Drums, dream dance n13-86.
Wis. Indian n27-81.
Dunn County o13-60.
Early man in Wisconsin and subsoil archeology n37-33.
Earthenware see Pottery.
Earthworks, animal effigies, Wisconsin territory n11-1.
antiquities, Wiskonsin territory n11-20.
Four Lakes Indian n18-14.
Winnebago o10-124.
Eau Claire County o13-60.
Effigy—a unique ceramic n35-53.
Hopewellian mound at Effigy Mounds National Monument, Iowa (see Mounds) n34-125.
Egypt antiquities n7-7.
Ellsworth, Wm. H. o16-115.
Eulrich garden beds county park project n15-19.
Falge, Louis o17-98.
Fire-steels n10-95.
Fishing, Indian n7-61.
Flint artifacts, corner-tang n-16-62.
collection n26-82.
disks, caches, Wisconsin n22-3.
eccentric n21-3.
knives o20-7.
perforators, chipped, Wisconsin o8-37.
scrapers o20-33; n1-58.
Spearpoint n3-95.
Flint Ridge, visit to n5-82.
Fluted axes—Ringeisen collection n36-25.
Fluted hammer n38-41.
Folktales (see Legends)
Fond du Lac County antiquities o14-1.
Cache, copper implements o13-97.
early Indian memories n25-126.
gravel pit burial n25-13; n28-43.
Food—aboriginal
utilization of vegetation by Indians of the Great Lakes Region n35-59.
Fords, Indian, Rock River n15-69.
Four Lakes Indians o9-115.
Fowke, Gerard n9-157.
Frauds, aboriginal pipes n15-49.
artifacts n15-53.
Indian implements n9-151.
relics n16-7.
Frost woods mound group n35-43.

Fur trade, Wisconsin o17-55.
Garden beds, Eulrich County park project n15-19.
stoneworks, Winnebago County n1-47.
Wisconsin o8-97.
prehistoric, of Wisconsin and Michigan and the Fox Indians n40-1.
Geneva Lake Centennial n11-44, 55.
Gerend, Alphonse n22-13.
Glosemeyer Mound Group, Warren County, Mo. n39-144.
Gorgets, W. H. Ellsworth collection o1-37.
An engraved marine shell gorget in Wis. n41-69.
Gouges, stone o20-83.
Grand Spring n24-78.
Grant County o15-177.
prehistoric tragedy n28-45.
Green Bay, west shore o11-125.
Green Lake County, western n11-100.
Grooved Axes:
some varieties in the Woodland area n37-46.
Guth, Alexander C. n24-83.
Hahn and Horicon sites—a preliminary report (complete volume 39, No. 4)
Heller Mound group n34-144.
Historic American buildings survey n18-121.
Hobby show, Milwaukee n19-95.
Hollister, Orra L. n23-129.
Hopewell n9-106; n27-1.
and Cahokia cultures in Wisconsin n9-160.
trait lists and culture n30-65.
climatic change: a contributing cause of the growth and decline of Northern Hopewellian culture n41-21.
Hopewellian Mounds n34-125.
Hoy, Philo Romayne o1-85.
Huebschmann, Dr. Francis, Indian agent n25-20.
Illinois archaeology society n17-90.
summary n28-19.
survey n6-56.
Implement, bone, Oshkosh Public Museum n23-25
Sheboygan n10-121.
cache o6-47.
copper n21-34.
Fond du Lac o13-97.
checklist, Wisconsin Indian n8-81.
copper o1-55; o3-49; n2-178; n10-72.
collection o20-27.
M. P. M. o1-11.
Indian n27-91; n28-14, 40, 57, 76.
frauds n9-151.
manufacture n9-177.
obsidian o2-95.
occurrence & use of bone, shell, hematite & lead, Wis. o9-11.
primary flake n29-23.
stone, fluted n7-219.
knobbed o12-96; geo. distribution o12:23.
crude, Congo Free State o7-111.
superimposed aboriginal n10-89.

trade o17-61; o18-16.
Wisconsin o9-15.
Indi-Eiken n19-56.
Indian Agency House, preservation of n10-77.
Indian figurine found n35-49.
Indian Land Cessions, Wisconsin n16-53.
Indian Landmarks Comm. meeting 1922 n1-56.
Indian life
adopted Indians n26-35.
butterflies n24-1.
costumes n18-1.
impact of war n25-10.
laws n24-33.
Minnesota n14-9.
sugar-bush ceremonials n11-172.
today n20-14.
use of earthenware vessels by Northwest n8-69.
Virginia n11-91.
Wisconsin
cultural changes, French contact period n30-1.
farming o18-19; n6-115.
fishing n7-61.
land cessions n16-53.
prehistoric cultures n30-36.
uses of woods and bark n11-148.
in an urban situation n36-147.
Indian place-names in Wisconsin Vol. 33 - 1 & 2 (complete).
Indiana archaeology n6-92.
Indians, indebtedness to o14-64.
no good, but dead n14-97.
Iowa archaeological survey, methods, results n8-135.
Iowa County, Wis.
prehistoric earthworks n37-135.
Ioway focus, extension of n16-60.
Iroquois aspect, preliminary report, Wisconsin n28-34.
Isle Royale National Park o10-73; n15-12.
Juneau County o17-107.
petroglyphs n28-51.
Kannenberg, Arthur P. n26-55.
work at Lasley Point site n26-50.
Kansas archaeological survey n20-9.
Kellogg, Louise Phelps n9-147; n23-87.
Kentucky n11-41.
ancient buried city n13-25.
ancient copper hoard n18-108.
Kettle Moraine State Forest n19-4.
Kickapoo Indians:
first one hundred years of white contact in Wisconsin n38-61.
Kings Mountain, battle of, anniversary celebration n9-187.
Kingston, finds near n1-24 .
Knives, ceremonial o13-176.
chipped flint & quartzite o20-7.
copper n9-145; n10-111; n13-32; n19-16.
Kohler, Marie C. n24-82.

Kolterman mound group:
salvage operations n36-3.
Radiocarbon date n37-133.
Koshkonong, pilgrimage o15-200.
Kraske village site and mound group n39-181.
Kumlien Centennial n24-68.
La Crosse County notes o11-97.
Lac Court Oreilles region o14-41.
Lake Poygan Indians n10-102.
Lakes, Beaver n10-7.
Beaver Dam n1-7.
Chetek o16-83.
Como n7-129.
Delavan n6-7.
Fox o20-111.
Geneva n6-113; n7-129.
Green o16-1.
Kegonsa, region n4-181.
Koshkonong o7-47.
Little Green n6-120.
Lake Michigan basin
Lake archaic culture and the Algoma Beach n39-175.
Lake Mendota
Six Mile Creek—a non-pottery site n40-19.
Minocqua n3-41.
Monona n1-119; n30-22.
Wild Life Sanctuary Assn. field meeting n6-110.
some points from Lake Monona n37-85.
North n10-7.
Pike n6-41.
Pine n10-7.
Poygan, Waushara Co.
Upper Mississippi pottery n39-149.
Rice o16-83.
Rock n5-107.
Shawano, & Wolf River o16-57.
Wingra o14-75.
Langlade, Sieur Charles de n11-143.
Lapham, Increase A. o1-32.
centenary o9-113.
eighty years after n12-48.
geologist n16-79.
letters n16-85.
research medal n5-49.
Wisconsin centennial n16-30.
Lapham Medalists: n41-19.
Lapham, Julia A. o20-26.
Lasley Point site n26-50.
Lathrop, Stanley Edwards n7-114.
Lawson, Publius o20-13.
Legends n7-223.
cave n18-59.
copper n20-35.
fire n20-84.
how stars were brought back to valley n19-93.
Indian corn origin n21-19.

iron n22-9.
Island Park n19-90.
Ojibwa n1-28.
rain n24-27.
social significance of n25-136.
Stockbridge n7-228.
Tewa n7-116.
Thunderbird, of post n9-128.
tree n19-30.
Winnebagoland n1-66; n20-31.
Winneboujou n9-130.
winter n22-49.
Wisconsin Hills n18-17.
rocks n19-7.
springs n18-79.
waterfalls n18-110.
young hunter's blessing o20-94.
Lemere, Oliver n9-175.
Leonard, Wm. Ellery n25-135.
Lithic laboratory n20-75.
Logan Museum—Beloit, Wisconsin
Albert Green Heath Collection n37-51.
Lost art, never was lost n8-39.
Lotz, Louis n2-175.
Lover's leaps, Indian, Wisconsin n17-84.
Lyman, Francis H. n3-29.
Mandan, Huff n9-120.
reconstructed village lodge, N. D. n18-29.
village site o7-122.
Mandoka n14-41.
Manitous, Fox n20-57.
Manitowoc County o14-121.
Maps, cartographic symbols for archaeological survey n8-129.
Marinette County o17-33.
Marker, West Point o13-101.
McKern greeting n25-22.
Medals, cornplanter o18-108.
Geo. Washington n7-115.
Indian n1-65.
Oshkosh Public Museum n16-97.
Wisconsin 13-28; o17-22.
King George II n16-4.
Lapham n5-49; n14-87.
Lincoln n8-103.
Lion and wolf n5-63.
Menomini n14-95.
Medicine, explanation n21-35.
Medicine Rock n18-35.
Memorials, Allouez o20-90.
preservation of Indian o20-149.
Menominee, Wis.
Wakanda Park mound group (Dn1) n40-95.
Menomini, collecting among n3-135.
concept of conservation n16-105.
native plants used by n3-24.
place names o18-97.
recollections of ethnologist o20-41.
religion n4-166.

Messmer, Archbishop Sebastian G. n9-174.
Metal, analysis of ancient Sinhalese n3-133.
red n10-69.
Michigan, northern, village and camp sites n9-180.
Michigan State Archaeological Society n3-26.
Survey o1-14.
Midwest Museums Conference 1927 n6-90.
Milwaukee County o15-23.
gravel pit burial n34-122 (see burials).
a brachycephalic cranium from Brookfield n37-73.
Indian burial n41-71.
Milwaukee Midsummer Festival Indian Village, 1941 n22-15.
Minnesota, archaeological remains in Kanabec County n6-64.
Mirror, bronze, Carthage n5-32.
Miscellaneous:
Early Man in Wisconsin n37-33.
role of the non-professional in the local society n37-82.
Jerrard letter n38-29.
killed by an arrow n38-58.
plea from society president n40-268.
naming a Chippewa child n39-120.
Mississippi cultures, history n24-33.
middle Miss. peoples n27-25.
upper Miss. peoples n27-10.
Missouri, archaeological activity n16-1.
Mitchell Park site n14-21.
Mitchell, Stephen Decatur n5-87.
Monroe County o11-97.
Monuments, aboriginal, Mukwonago o2-8.
preservation of Mexican & Central American n1-63.
Mound builders n10-80.
tomb, Dickson n8-29.
Mound exploration, present condition, Wisconsin o1-6.
Mound relics, suggestions of Mexico o8-65.
Mounds o1-6; o9-52.
Achen n26-40.
Aztalan Vol. 39, No. 1
Bedora group n35-74.
Beloit n18-119; n39-155.
Bird, fork-tailed n15-36; Joedicke n36-103.
Brugger o20-29.
Buffalo Lake n6-75.
Cahokia n1-25; n13-7.
Cassville o15-193.
Cutler, Waukesha o1-41.
Dane Co. n36-53.
Delavan Lake n3-132; n4-157.
Destruction of n20-54.
southern state n13-94.
Devils Lake State Park n36-12.
Dodge County:
Effigy mounds n35-77.
Drummond-Schaumberg effigy n36-57.
Prawatschke group n37-58.
Oak Grove effigy n37-75.
Effigy mounds in Richland County n34-168.

Effigy o13-182; o20-35; n11-1; n13-84.
airplane view n6-105.
goose n20-50.
northern Illinois o17-19.
trait list n30-39.
Florida burial n10-123.
Fox Island, Rest Lake, Vilas County o2-14.
Frost Woods group n35-43.
Hagner n23-1.
Heim n18-39.
Heller group n34-144.
High Cliff n28-1.
Hoard n24-73; n25-4.
Hopewellian n34-125.
Horicon n17-55.
Indian Hill o13-93.
Intaglio o9-5; o19-197.
Iowa County n37-135.
Joedicke Bird n36-103.
Juneau County n17-88.
Kentucky n13-25.
Kingston n1-22.
Kolterman group n36-3; n37-133.
Kraske group n39-181.
Lake Mendota o11-7.
Lake Waubesa o12-107.
Lasley Point n19-42; n21-29; n23-32, 37.
Lizard Mound State Park—unique display of skelton n41-53.
Lynx o20-96.
MacGregor Bay Cemetery n10-61.
Man o6-45; o7-139.
Mendota Hills bird effigy, Dane Co. n36-53.
Minnesota, Nett-Rainy Lake region n7-221.
Monona n24-78; n25-5.
Nelson Dewey Memorial State Park n20-29.
Oak Grove effigy, Dodge Co. n37-75.
Observatory Hill o13-90.
Panther, curve-tailed n16-10.
Pecatonia River o9-117.
Pleasant Lake n12-111; n15-74.
Plum City n4-153.
Potato Lake, Rusk County o11-93.
Prawatschke Woodland burial complex n37-87.
Prawatschke group excavation n37-58.
Richland County effigy n34-168.
Rockford n8-35.
Rush Lake effigy n39-130.
Serpent
Medicine Butte n14-23.
Menasha o1-35.
Vilas County n28-54.
Shawano County o18-105.
Springdale n34-165.
State Fair Park o9-79; n22-19.
Turtle Creek o12-7.
uses of n3-98.

Vonburn, Prairie du Sac o1-93.
Wakanda Park, Menominee n40-95.
Warnke mounds, Portage County n37-25.
Waubeka n28-63.
White's group, Vernon County o12-30.
Winnebago o9-101; n8-106.
Wisconsin state parks n15-1.
Wood County n17-88.
Mukwonago, aboriginal monuments o2-8.
Museums
American Museum of Natural History, archaeological materials from Wisconsin in o6-20.
Dwight Foster Historical n17-67.
exhibits n25-98.
field of small n25-98.
Ft. Atkinson, Lawton & Lee collections n21-14.
geological n20-81.
historical, meeting n21-76.
Kohler n9-143.
log building, of Wisconsin n24-46.
Neville Public
archaeological research n26-60.
wax & fiber process of pottery restoration n25-16.
new Wisconsin n19-25.
origins in Milwaukee n12-54.
Oshkosh Public n23-19.
bone implements n23-25.
medals n16-97.
shell work n23-28.
outdoor, Clintonville n16-28.
robberies n4-169.
Wisconsin's, 1941 n22-45.
Museums Assn. Conference, Michigan-Indiana-Ohio, 1939 n20-46.
Myths (see Legends)
Names, family, civilized Indians n8-36.
Indian, Wisconsin lakes n4-164.
Menomini Indian place, in Wisconsin o18-97.
where Wisconsin originated n26-84.
Indian Place-Names in Wisconsin. Vol .33 - 1 & 2.
Nation of the Three Fires o18-109.
Navaho, life & customs of, women n18-100.
Nebraska archaeology n13-1.
evaluation of recent finds attributed to Pleistocene n13-49.
Necklace, comparison between an Aurignacian and a Magdalenian, Dordogne district, France n5-58.
North Dakota, progress in n20-77.
Obsidian, implements in Wisconsin o2-95.
Oconto, Wis.
Bedora mound group n35-74.
Oconto site—an old copper manifestation n38-222.
Oconto site—an old copper manifestation n33-199 (see Copper)
Ohio—preservation of archaeological and historical sites o19-16.
Ojibwa Informant:
John Mink n36-106.
Oneida County n3-52.
Oneida, Wisconsin, wake n22-1.

Ornaments, copper 03-101.
bird effigy n11-104.
fluorspar n16-25.
Indian trade implements o17-61.
silver, Grand Butte n10-91.
Osceola site: near Potosi, Wis. n27-53.
an old copper site n38-186.
Oshkosh, Chief Reginald n16-100.
relics n19-69.
Otoliths—as ornaments n33-223.
Outagamie County antiquities o15-1.
villages n13-71.
Ox-Bow site
testing operations n37-131.
Ozaukee Co.: red ochre burial n39-115.
Parker, George n17-91.
Parmalee, Paul W.
animal remains from Raddatz rockshelter (Sk5) n40-83.
Pathology, vertebral, of prehistoric Wisconsin Indians n10-105.
Pendant, shell effigy n1-19.
Pepin, Armstrong site; an upper Mississippi site at, Wisconsin n30-79.
Perforators, chipped flint, Wisconsin o8-37.
Pestles, stone n3-7; n15-41.
New York n10-74.
Petroglyphs
Buffalo County n34-207.
Juneau County n28-51.
mouth of Lemonweir River n17-75.
pictographs n9-123.
Hanson, Vernon County n41-98.
Peyote cult n29-28.
Pictographs, Juneau County n28-51.
Ontario n18-28.
petroglyphs n9-123.
Picture writing, Chippewa n6-80.
Pike, copper n5-66.
greater n12-31.
Pipes, aboriginal o4-47.
fraudulent n15-49.
Calumet o10-5.
disk o13-103.
human effigy o1-92.
Minnesota copper n7-128.
peace, ceremony passes n25-97.
platform o7-34; n26-44.
effigy n8-13.
stems n1-62.
three unfinished n1-57.
West collection o12-64.
monograph n14-31.
Plants used by Bois Fort Chippewa in Minnesota n7-230.
Chippewa n21-8.
White Mt. Apaches in Arizona n8-143.
Plum City n4-153.
Plummets, distribution in Wisconsin o8-139; n5-64.
ornamental stone o20-28.

Points, arrow, angular barbed o20-18.
notched chipped n17-81.
triangular n19-59.
arrowhead art n15-60.
Folsom, controversy n14-27.
harpoon, native copper n7-50.
spear, copper n13-15; n18-73.
tooth shank n18-77.
flint n3-95.
notched chipped n17-81.
"turkey tail" n9-99.
Yuma n15-45.
Folsomoid points, Richland Co. n35-79.
Polk County n29-1.
Port Washington, an old copper site? n38-1.
Portage County o11-39; o12-87.
Warnke mounds n37-25.
Potawatomi o19-41.
prairie n4-160.
trip to n3-143.
Pots (see Pottery)
Potsherds (see Pottery)
Pottery, aboriginal, Wisconsin o1-96; o4-19; n12-89.
Black River site o20-93.
ceramic repository, University of Michigan n8-20.
importance in Wisconsin archaeology n8-26.
Mimbres Valley, N. M. n11-82.
Northwest Indians n8-69.
Panama n13-98.
potsherds, Lake Michigan shore o4-3.
restoration process n12-81.
Neville Public Museum n25-16.
restoration n38-43.
smoothers n9-171.
textile imprints n27-71.
vessel, Hamilton collection o1-10.
Winnebago n19-1; n22-84.
spoons and dippers n19-21.
Winnebago County n8-124.
Waushara Co.: Lake Poygan: Upper Mississippi pottery n39-149.
Prehistoric industry, Franco-American study o9-35.
Prehistoric specialization n14-15.
Quarries, catlinite o13-80.
pipestone, Barron County o9-31.
Racine County o3-6.
Radiocarbon dates for Wisconsin n41-65.
(see Carbon-14 Dates)
Radke-Dunham site: Radke area n38-5.
circular fire pit—Dunham area n40-121.
Rainy Lakes Indians n2-140.
Reamers, Indian, drills n24-25.
Red Ochre:
burial in Ozaukee County n39-115.
beads from red ochre burial n40-25.
culture—an early burial complex in northern Indiana n41-35.

Reigh Site:
Winnebago County, burial complex n35-1.
additional material from Reigh site n37-28.
Reigh site report No. 3 n37-97; n38-278.
Eskimo at Reigh site n38-30.
burial complex of the Reigh site n38-244.
Relics, Chief Oshkosh n19-69.
suggestions of Mexico in mound o8-65.
Restoration, projects for, of sites and structures of history or archaeological importance n16-74.
Richland County
effigy mounds n34-168.
Folsomoid points n35-79.
Rings, finger, Indian trade n24-7.
Robberies, museum n4-169.
Rock paintings, Mayville Indian n30-73.
Rock river, Indian village & camp sites, lower, Wisconsin n9-7.
Winnebago village & chieftains n2-125.
Rock shelter, Brown County n25-90.
cave in France n3-14.
Raddatz, Sk5, Wis. n40-33.
geology of Raddatz rockshelter, Sk5, Wis. n40-69.
animal remains of Raddatz rockshelter n40-83.
archaeological studies of four Wisconsin rockshelters n40-137.
animal remains from Durst rockshelter, Sauk Co., Wis. n41-11.
Rocks, guide to, and minerals used by prehistoric Indians in Wisconsin area n25-76.
Rubbish n12-90.
Rush Lake
an effigy mound n39-130.
Rusk County o13-60; n29-1.
St. Marc, Mission of n14-1.
Satterlee, John Valentine o19-209; n1-60.
Sauk County, summary of archaeology, eastern o5-230.
western n1-81.
survey work report n11-67.
Sauk war bundles n2-148.
Scrapers, flint o20-33; n1-58.
Shawano County o18-105.
Sheboygan County o1-61; o19-121.
Shell heaps, clam eaters, Winnebago County o2-6.
literature on Wisconsin, and artifacts n17-20.
Shells, aboriginal uses n17-1.
beads n8-32.
decorative uses n25-112.
marine, on Indian sites, Wisconsin o12-53.
serrated, Winnebago n20-23.
shellwork, Oshkosh Museum n23-28.
Shrines, Mihi n17-93.
Sioux, evidence of ancestors of Chiwere, outskirts of Milwaukee n27-89.
habitations in Minnesota o7-155.
Skavlem, Halvor Lars n19-47.
Skeletal remains, importance in Wisconsin archaeology n8-14.
Skin dressing, aboriginal n19-76.
Chippewa Indian method n28-6.

Skulls, perforated n14-37; n24-49.
remains, importance in Wisconsin archaeology n8-14.
Smith, Huron Herbert n12-69.
Smoothers, pottery n9-171.
Society of Dreamers and the O-ge-dah, or Head-Men Dance of the Bois Fort Chippewa Indians of Nett Lake, Minnesota. n13-35.
Spade, stone, hoes n2-165.
Spirit stones o7-165; o20-87; n2-176; n13-18.
Sponge divers ceremony n7-117.
Springdale mounds n34-165.
Springs, blue n22-7.
sacred, Lake Poygan region n7-211.
spirit n7-215; n19-74.
Spud, fluted copper n21-65.
stone o2-15; n5-79.
Stockaded village n8-61.
Stoneworks, garden beds in Winnebago County n1-47.
Strong, Moses o2-4.
Subsoil archeology n37-33.
Superstitions and derivations n17-62.
Tanning (see Skin Dressing)
Taylor County o11-91.
Tennessee archaeology at St. Louis, Thruston exhibit o3-133.
Textiles, cloth weaving of Dakota n3-22.
imprints on Wisconsin Indian pottery n27-71.
weaving technic of Winnebago bags n12-33.
Thompson, Orrin n15-10.
Thwaites, Reuben Gold o12-93.
Tobacco, uses of, by Wisconsin Indians o10-5.
Tools, aboriginal discrimination in selection of materials for o7-125.
Indian stone cutting n6-88.
odd Indian n12-128.
Turquois mines, prehistoric n8-100.
Totem poles and totemism n19-17.
Totten site, Walworth County
a possible non pottery site n40-116.
Trade material, beads o7-116; n9-109.
crosses, silver o9-104.
finger rings n24-7.
Grignon-Porlier Post n21-71.
implements & ornaments o17-61; o18-16.
Trade silver and Indian silverwork n34-1.
Trail marking trees n21-48.
Trails, Black Hawk, study asked n25-96.
Brule-St. Croix portage n14-34.
Chicago-Milwaukee, Green Bay n9-103.
Indian overland travelways n9-114.
Pierce county n6-53.
Trail lists, effigy mound aspect n30-39.
prehistoric Wisconsin cultures n26-66.
some comments on, Hopewellian culture n30-65.
Tree ring record, forgotten n14-45.
Trempealeau County o11-86.
Turtle Creek site o12-7.
Tyler, Willis E. n25-3.
Urn burials in Alabama n9-110.

Utah, ancient, people believed snakes evolved from animal n15-44.
archaeological finds in Uintah Basin n11-162.
bear dance of Ouray Utes n9-148.
Brush Creek region, achaeological notes, northeastern n10-132; n15-23.
Vandalism check, Arizona n14-43.
Vernon County o11-86.
Vilas County n3-52.
Virginia Indians n11-91.
Walworth County, the Totten site n40-116.
Wapuka, dedicating site n14-89.
War bundles, Sauk n2-148.
Washburn County o4-35.
Washington Island o13-157.
Water monster inhabited lakes and streams in Wisconsin n17-27.
Watertown village site n5-51.
Waukesha County, aboriginal monument at Mukwonago o2-8.
aboriginal occupation in Pewaukee township o8-81.
antiquities o6-11.
northern townships n2-7.
southern townships n2-69.
Waushara County o15-113.
Weights, pebble net o7-131.
West, George A. n18-69.
collection of aboriginal pipes o12-64.
pipe monograph n14-31.
testimonial meeting n14-49.
What a season brings forth n11-157.
White Feather burial n5-29.
Winnebago County o2-40; n1-61.
campsite n10-54.
village site n8-94.
Winnebago Indians o6-78; n2-173.
birds as food n25-95.
builders of Wisconsin earthworks o10-124.
change in child care patterns n29-39.
cultural change n25-119.
medical technique n34-139.
painted and incised pottery fragments n22-84.
painted pottery n19-1.
prehistoric, culture pottery n19-21.
serrated shells n20-23.
village and chieftains, Lower Rock River region n2-125.
weaving technic n12-33.
Wisconsin, northeast o11-107.
northwest o13-7.
western o4-25.
Wisconsin antiquities, Indian authorship of o6-169.
record o5-289; o7-1; o8-113; o10-165; n4-9.
Wisconsin archaeological parks, post-war program n25-1.
Wisconsin Archaeological Society, articles of incorporation, by laws o13-108; n25-25.
assembly, Madison o9-57.
field assembly, Carroll College, 1906 o6-1.
field work, 1939 n20-69.
joint meeting, Wisconsin scientific societies o7-107; n5-56; n21-5.

laws relating to appropriation to, 1943 n25-129.
meeting, Manitowoc, 1912 o11-61.
Prarie du Chien, 1911 o11-105.
Ripon, 1931 n10-116.
1945 legislative session n26-58.
recent achievement o5-182.
retains name of Lapham's Peak n24-80.
silver anniversary celebration n5-47.
state fair exhibit o5-201.
university summer session excursion, 1914 o13-106.
women contributors n21-51.

Wisconsin Archaeological Survey n11-57; n29-18.
conference n3-28.
1923 n3-31.
1925 n5-30.
1929 n9-154.
1940 n22-89.
report of committees o11-147; n11-61.

Wisconsin archaeology
contemporary scene n17-34.
findings, 1943 n25-7.
in light of recent finds in other areas n20-1.
investigations, 1935 n16-17.
materials in AMNH o6-20.
progress o7-109.
research n12-1.
suggestions o6-70.
Wisconsin joins ranks of oldest inhabited areas in America n17-51.

Wisconsin landmarks o12-98.

Wisconsin tercentenary n13-81.

Wisconsin valley, upper, aboriginal remains o12-75.

Wisconsin War History Commission o17-46.

Wood County o11-39.

Woodland pot from Dodge County n35-54.

Woodland burial complex
Prawatschke mound group n37-87.

Wyoming, archeological work o7-119.

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Vol. 20, No. 1, 2, 3
Vol. 21, No. 1, 3, 4
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Warren L. Wittry

Illinois State Museum, Springfield

This bibliography has been compiled to supplement the index issue of **The Wisconsin Archeologist,** published in Vol. 33, No. 3 (1952) and in this issue. Listed are materials pertaining to Wisconsin archeology **not** published in this series. Publication of the bibliography is appropriate at this time because, beginning with literature dated 1959, the Society for American Archaeology will publish an annual summary entitled **Abstracts of New World Archaeology.** It will be organized by regions. Thus, through the use of the indexes, this bibliography and the abstracts, future workers will have a more-or-less complete guide to writings on the prehistory of Wisconsin.

Materials published in newspapers, county and other local histories, brief announcements of fieldwork and reviews have been deliberately omitted. There are perhaps some pertinent items missing of which the compiler is unaware or which have slipped his mind. All bibliographies of a comprehensive nature suffer from one kind of omission or another. We can only hope that they are reasonably complete and useful as a time-saving tool by other workers. About the only other use they have is to serve as a kind of index to the amount and type of research which has been conducted in a given field.

Also not listed are a number of unpublished sources available to the serious student. Among these are the manuscripts and Wisconsin Archeological Atlas of Charles E. Brown in the State Historical Society. Most larger museums have collections, site records and files of archeological information, and local collectors who have kept adequate records are a rich source. There are a few unpublished theses in the library of the University of Wisconsin.

ABBREVIATIONS

AAnthropologist—American Anthropologist
AAntiquity—American Antiquity
BAE-AR—Bureau of American Ethnology, Annual Report
BAE-B—Bureau of American Ethnology, Bulletin
MPM-B—Bulletin of the Public Museum of the City of Milwaukee
SI-AR—Smithsonian Institution, Annual Report
USNM-R—United States National Museum, Annual Report
WASAL-T—Transactions of the Wisconsin Academy of Sciences, Arts and Letters

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INDEX TO BIBLIOGRAPHY

A

Adams County, mounds 77, 151.
Archaic, see Old Copper culture.
Art, aboriginal, 47.
Ashland County, petroglyphs 98, pictographs 151.
Aztalan, 8, 26, 46, 76, 77, 82, 84, 95, 122, 134, 148, 151, 154.

B

Barron County, catlinite mining 7, 97, mounds 31, 32, 97, 151, 152, quartzite quarrying 7, trails 97, village sites 31.
Bayfield County, copper implements 165, mounds 151.
Bison, extinct, 111.
Brown County, Eden-Scotts Bluff burial 100, garden beds 151, mounds 77, 151, Red Banks enclosure 139.
Buffalo County, mounds 19, 151, fortifications 151.
Burials, 22.
Burnett County, mounds 151.

C

Calumet County, mounds 77, 151.
Carcajou site, 57.
Catlinite, quarrying 7, 65, 97.
Cemeteries, 22.
Central Basin, 171.
Chiwere Sioux, archeological remains 51.
Chronogy, 30, 53, 54, 55, 142.
Clam River culture, 32, 95.
Climate, 129, 131.
Columbia County, enclosure 151, mounds 77, 151.
Copper, in glacial drift, 141.
Copper implements, 25, 26, 40, 42, 60, 61, 68, 70, 71, 77, 104, 105, 106, 111, 124, 125, 133, 134, 135, 144, 160, 161, 165, metallographic study 48, 143, 167. See Old Copper culture.
Copper mining, 6, 33, 49, 50, 63, 66, 71, 103, 110, 128, 160, 163, 164.
Corn fields, 5.
Courtois Mound group, 89.
Crawford County, campsites 89, mounds 20, 22, 23, 77, 89, 119, 147, 150, 151, 152, pottery 62, trade goods intrusive in mound 136, 152.
Culture classification, 39, 45, 91, 94, 126, 166.

D

Dane County, fortifications 174, lead smelting (prehistoric?) 174, mounds 1, 34, 36, 77, 80, 119, 150, 151, 152, 155, 156, 157, 168, 173,. trails 151, village sites 4, 156, 174.
Dental pathology, 44.
Dodge County, mounds 77, 88, 119, 151.
Door County, mounds 50, 151.
Dunn County, petroglyphs 19.

E

Eden-Scotts Bluff burial, 100.
Effigy Mounds, 46, 84, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 133, 145, 148, 149, 151, distribution 121, Winnebago Indian explanation 38, 133, 134, explanation refuted 87.

Effigy Mound culture, 4, 10, 85, 88, 95, 101, 107, 138, 140.
"Elephant" mound, 59, 119, 157.
Enclosures, 83, 85, 139, 149, 151.
Extinct animals, 111, 130.

F

Flucke mound group, 89.
Fluted points, 27.
Fond du Lac County, mounds 150, 151.
Forest County, mounds 77, 151.
Fort, French, 127.
Fort Ancient Aspect, 52.
Fox Indian village, 79.
Fraudulent artifacts, 73.

G

Garden beds, 151.
Geography, 129.
Grand River focus, 95, 96, site 74.
Grant County, graves 159, mounds 11, 23, 59, 77, 119, 146, 149, 150, 151, 152, 159, skull 72, village 89.
Green Lake County, mounds 3, 37, 74, 77, 85, 119, 151, village sites 74, 96.
Gullickson Glen rockshelter, 113.

H

Historic sites, 75, 79, 127, 172.
Hopewell culture, 4, 31, 86, 89, 95, 136, 138, chronological position 55. See also Central Basin.

I

Implements, 104, 105, 106.
Iowa County, mounds 58, 149, 151.
Isle Royale, 6, 33, 49, 63, 66.

J

Jackson County, petroglyphs 113.
Jefferson County, mounds 77. See also Aztalan, Carcajou.
Juneau County, mounds 77, 151.

K

Karow site, 96.
Kenosha County, mounds 77, 151.
Keshena focus, 95.
Kletzien mound group, 88.
Kratz Creek mound group, 10.

L

LaCrosse County, campsites 89, 96, 151, petroglyphs 18, 98, 109, 137.
LaFayette County, mounds 151.
Lake Winnebago focus, 95, 96.
Lead-smelting, 174.

M

McCauley site, 96.
McClaughry mound group, 85.
Man-shaped mounds, 78.
Manitowoc County, mounds 77, 151, pottery 64.
Marathon County, mounds 151.
Marquette County, mounds 10, 77, 85, 151.
Mascoutin Indian village, 75, 172.
Menominee Indians, 60.
Middle Mississippi culture, 8, 95, 101, 138. See also Aztalan.
Midway site, 96.
Midwest archeology, 39.
Midwestern taxonomic method, 94.
Milwaukee County, cornfields 5, mounds 5, 77, 151.
Monroe County, mounds 151.
Mounds, 1, 3, 5, 9, 11, 19, 20, 21, 23, 28, 29, 31, 32, 34, 35, 36, 37, 38, 43, 50, 58, 59, 67, 69, 77, 78, 80, 85, 86, 88, 89, 97, 101, 107, 112, 136, 145, 146, 147, 150, 151, 152, 155, 156, 157, 159, 168, 173.

N

Neale mound group, 85.
Nicolls mound, 86, 89.
Nitschke mound group, 88.

O

Obsidian, 11, 65.
Oconto County, mounds 9, petroglyphs 13, villages 9.
Old Copper culture, 95, 102, 128, 130, 131, 132, 138, 160, 170, 175. See also copper implements and copper mining.
Oneota Aspect, see Upper Mississippi culture.
Orr focus, 95, 96.
Outagamie County, mounds, 151.
Ozaukee County, mounds, 77, 151.

P

PaleoIndian horizon, 27, 100, 111, 175.
Pepin County, mounds 19, 43, 151.
Perrot mound group, 89.
Petroglyphs, 13, 18, 19, 81, 98, 109, 113, 137.
Physical anthropology, 37, 44, 72, 108.
Pictographs, 151.
Pierce County, mounds, 101, 151.
Pipes, 162.
Plummets, 155.
Polk County, extinct bison 111, mounds 151.
Portage County, mounds 151.

Q

Quartzite, implements 16, quarrying 7, 16.

R

Racine County, burials 68, mounds 67, 77, 151.
Richland County, mounds 35, 147, 149, 150, 151.
Rock County, mounds 77, 119, 151, 152.
Ross mound group I, 107.

S

Sauk County, antiquities 28, 77, 151, pottery 62.
Sawyer County, spirit stone 2.
Schwert mound group, 89.
Sheboygan County, mounds 77, 88, 150, 151, 152.
Shrake-Gilles site, 96.
Shrake mound group II, 89.
Silver artifacts, 136.
Spirit stone, 2.
Stone implements, 47, 65, 77, 104, 105, 106, 133.
Sue Coulee mound group, 89.

T

Trade, aboriginal, 135.
Trade goods in mounds, 67, 136, 153.
Trails, 97, 151.
Trempealeau County, campsites 88, 96, French fort 127, mounds 21, 38, 86, 89, 151, petroglyphs 81, 98.

U

Upper Mississippi culture, 51, 52, 56, 57, 74, 95, 96, 101, 138.
Utley mound group, 85.

V

Vernon County, mounds 21, 77, 136, 147, 150, 151, 152, pottery 62, 64, villages 4, 9, 96.

W

Walker-Hooper site, 96.
Walworth County, copper implement 42, mounds 151.
Washington County, mounds 77, 151.
Waukesha County, mounds 77, 112, 151.
Waupaca County, copper implement 125, mounds 151, pits 14, 15.
Waushara County, mounds 151.
White camp site II, 96.
Winnebago County, antiquities 133, mounds 3, 77, 151, villages 96.
Winnebago Indians, archeology 133, explain effigy mounds 38, 133, 134, explanation refuted 87, hypothesis for prehistory of Winnebago 56, 57.
Wisconsin archeology, general summaries 12, 17, 24, 41, 53, 77, 95, 99, 101, 126, 131, 153, 142, 166, 169.
Wood County, mounds 107.
Woodland culture, 95, 138.
Woodland culture pattern, hypothesis for Asiatic origin, 93.

X

X-ray drawing, Indian, 109.

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PORTAGE COUNTY SITE REPORT, Bradley Blake 57

A NOTCHED HOE FROM WISCONSIN Robert Ritzenthaler 77

HIXTON SILICIFIED SANDSTONE: A UNIQUE LITHIC MATERIAL USED BY PREHISTORIC CULTURES, James Porter 78

CACHE OF 29 BLANKS FROM MARINETTE COUNTY, Paul Koeppler & Robert Snyder 86

THE ERICKSON MOUND GROUP, Peter L. Larson 88

TRUNCATED-BARB POINTS FROM DODGE COUNTY, Robert Ritzenthaler 90

BOOK REVIEWS 92

COLLECTOR'S CORNER 94

INTERESTING WISCONSIN SPECIMENS 96

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PORTAGE COUNTY SITE REPORT [1]

Bradley Blake

Mound G, a forty-six by forty-two foot conical mound located in Section 21, Township 23 North, Range 8 East, Portage County, Wisconsin, was selected for excavation because of its availability and apparent undisturbed condition. This mound, along with several other conical and effigy mounds in the immediate area, had escaped plundering over the years. The mound was located on the edge of a field which had been farmed over the years resulting in the destruction of an undetermined amount of original mound surface. This fortunate circumstance may be attributed to their unobtrusive size which probably attracted less attention than nearby, higher mounds which were located in a wooded area overlooking the Wisconsin River. Excavation operations began on the nineteenth of August, 1957, and extended into the last week of September of that year. [2] A base line was established, and the mound staked out in five foot squares. An exploratory trench measuring five feet wide and forty-six feet long was dug from south to north through the center of the mound in order to confirm the site as a burial mound and to facilitate further excavation. [3]

The exploratory trench revealed a mound floor consisting of undisturbed sterile moist sand. The plow zone yielded in excess of fifty grit-tempered, cord roughened pottery sherds, as well as a quartzite perferator and several chert spalls. A cross-section of the exposed walls of the trench suggested that the mound itself be excavated in nine inch levels so as to accommodate the plow zone, what appeared to be an old humus line, and the remaining undifferentiated mound fill. Each five foot square of excavated mound fill was systematically screened, and the available artifacts bagged and labeled

according to their position within the mound as determined by the grid system and level assignment.

The excavation of 05R1 and 010R1 of the exploratory trench indicated soil mixture and fine carbon particles as well as a black humus line two inches thick and located four inches below the plow zone. Progressive excavation produced increased soil discoloration and a widening of the old humus line from two to five inches in the 014R1 square, and a maximum thickness of seven and one-half inches in square 30R1.

The sub-surface humus line which traveled the length of the walls of the exploratory trench suggested that the mound might have been recapped, or resurfaced, resulting in the decay of the then existing vegetation on the original mound surface, and thus resulting in a dark line which contrasted nicely with the otherwise tan soil of the mound fill.

One interesting aspect of the old humus line was brought to light with the excavation of square 30R1. In this instance the humus line was seen to divide and drop abruptly, thus forming an inverted triangle with the apex resting on the mound floor. Careful excavation in the area of the apex produced a disarticulated infant burial. The broken humus line which converged on the mound floor strongly suggested an intrusive burial, obviously performed after the mound had been recapped. While the mound may have been recapped for the second time following the infant intrusion, there was no evidence in support of this.

Once the exploratory trench had been completed, and the mound bisected, a decision was made to run a second trench west from square 30R1. Eventually, the excavation included all those squares indicated on diagram I. A discussion of the features, ceramic analysis, stone assemblage, and burial complex follows.

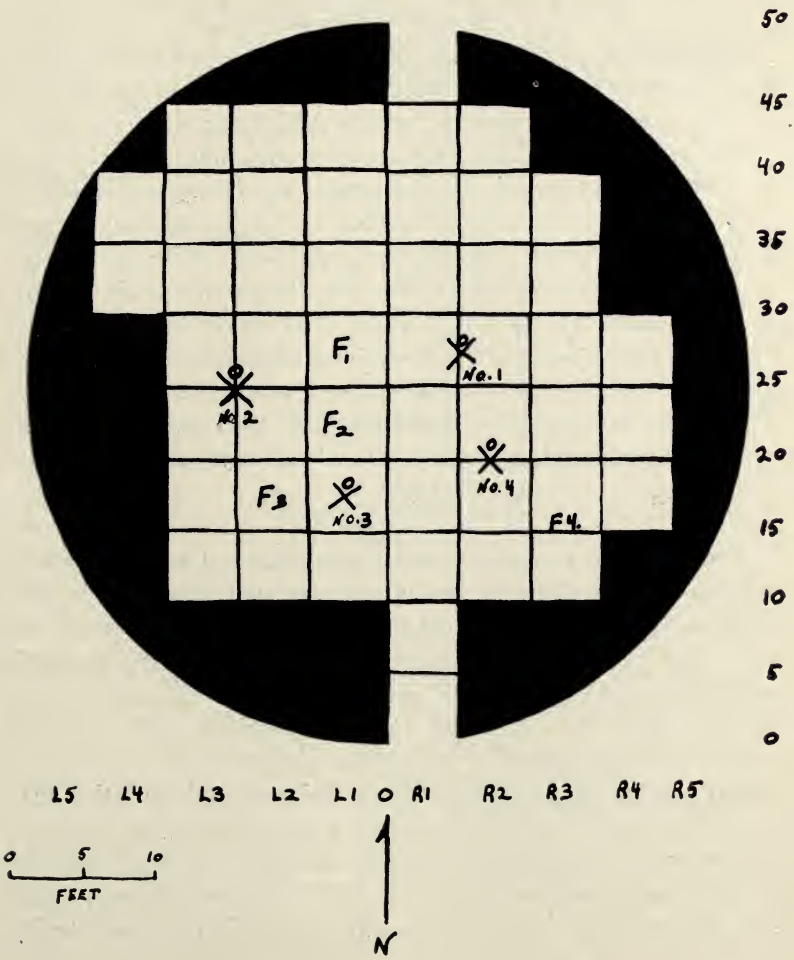
Features

Feature No. 1: Square 30L1 produced two dark areas in the sand at level three. These were very close together and measured eight to ten inches each in diameter. Excavation was continued down to level four where the two dark areas blended into one well-defined profile in the north-

ern half of the square. This feature was traced to a depth of 4' 10" producing grit-tempered, cord-roughened body sherds and several fragments of bone. There were no signs of burning, nor were carbon particles discernable.

Feature No. 2: Charred sandstone and pottery fragments were located twenty-one inches below the mound surface of square 25L1 and extended several inches into

DIAGRAM I



square 20L1. The feature measured nineteen inches in diameter and eight inches in thickness.

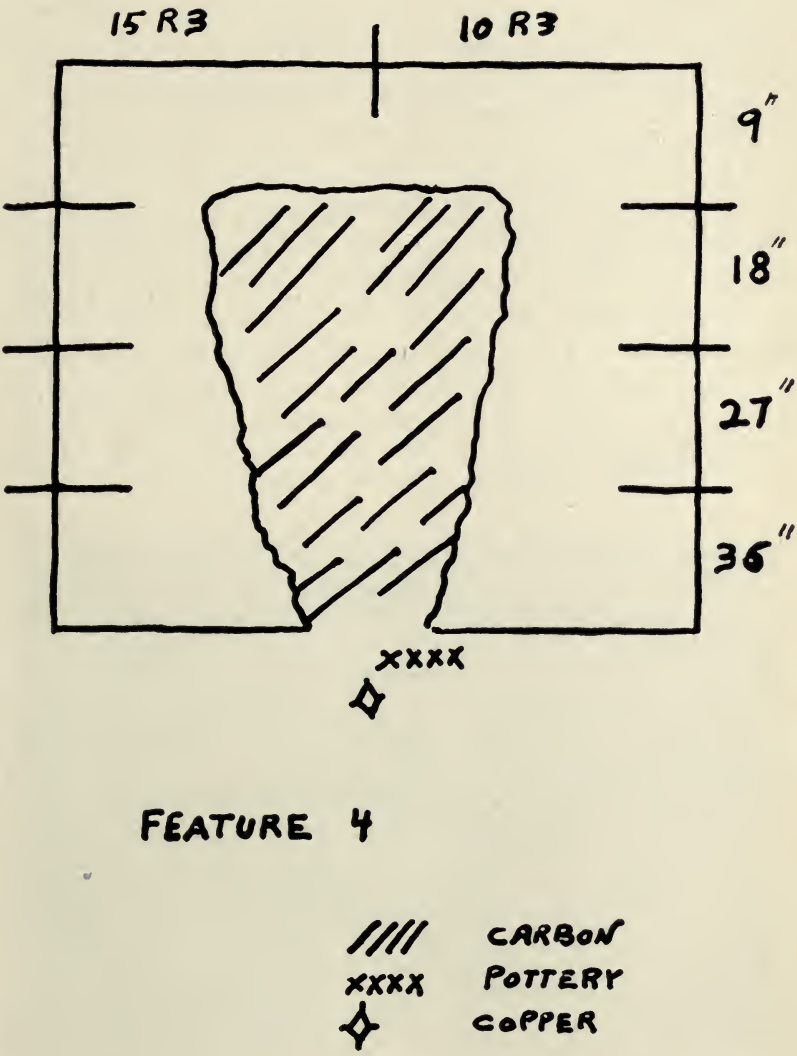
Feature No. 3: At levels two and three, beginning seventeen inches below the surface of the mound and ending at a depth of twenty-four inches, square 20L2 produced a deposit consisting of one hundred and thirty mixed pottery sherds, one unworked flake, and one clam shell fragment. The deposit, which measured twenty-two inches in diameter and seven inches in depth, appeared to have been burned, in that there was a greasy carbon-like film deposited between the fragments of the feature.

Feature No. 4: This feature, divided between the west walls of squares 10R3 and 15R3, made its appearance nine inches below the mound surface and extended to a depth of eight inches below the floor of the mound where several fragments of grit-tempered, cord-roughened Madison Plain pottery were located. Two inches below there were two small, nondescript fragments of copper. The artifacts located in the floor of the mound were resting in a localized patch of white sand. The carboned area indicated in diagram II contained charred bone fragments and blackened sand. The heavy presence of carbon suggested a fireplace. Unfortunately, the carbon particles were not large enough to permit descriptive analyses.

The Burial Complex

The nature of the sandy soil of the mound site and constant water leaching over the years had reduced the skeletal materials to the point where they were extremely difficult to expose and remove. It was found that the skeletal material which rested in moist sand tended to take on the appearance of the sand itself. To cope with this problem, white powder was carefully applied with a soft brush to produce a photographic contrast between the skeletal material and the surrounding mound fill. Each burial encountered in the body of the mound was carefully exposed, brushed, mapped in position, photographed, then talcum powdered and photographed for the second time. In this manner each burial was finally

DIAGRAM II



lifted from its position and bagged according to the appropriate square and level.[4]

The four burials discussed below appear to have been interred in such a manner as to suggest minimal concern for rigid ritualistic burial practices.

Burial No. 1

Age: Under six months.
Sex: Indeterminate.
Position: Disarticulated.
Grave Goods: None.

This burial was located in square 30R2. It was an intrusive burial measuring four feet, nine inches from the surface of the mound to the base of the burial pit. Removal of the fragmentary skeletal remains necessitated probing several inches into square 30R1. Because of the fragmentary condition of the skeleton, it was impossible to determine the position of the body at the time of interment.

Skeletal Inventory:

1. **Mandible:**
   a. Less ascending ramuses.

Fig. 1 — Burial No. 2. Partially Flexed.

b. Full deciduous dentition, no eruption.

2. **Clavical:**
   a. Left.
3. Humerus fragments.
4. Femur fragments.

Burial No. 2 (Fig. 1)

Age: Under six months.
Sex: Indeterminate.
Position: Partially flexed.
Grave Goods: None.

The exposure of a fragment of a human femur located four feet, eight inches deep in the mound fill of square 30L2 led to the necessary excavation of squares 30L2, 30L3, 25L2, and 25L3.

The burial, a partially-flexed infant resting on its right side with the head pointed in a south-easterly direction, extended into each of the four squares mentioned above. The extremities were missing, as were the pelvis and most of the cranium. There were no grave goods associated with the remains.

Skeletal Inventory:

1. **Calvarium:**
   a. Right frontal orbit.
   b. Right temporal fragments.
   c. Left temporal fragments.
2. **Face:**
   a. Left maxilla only.
   b. Full dentition, none erupted.
3. **Mandible:**
   a. Left portion only.
   b. Full dentition, none erupted.
4. **Vertebrae and Ribs:**
   a. Cervical: Five fragments of neural arches.
   b. Left ribs: Fragments.
   c. Right ribs: Fragments.
   d. Thoracic: Eight fragments of neural arches.

e. Four broken vertebral bodies.
f. Lumbar: Two fragments of neural arches.

5. **Innominate:**
   a. Right ilium.
   b. Left ilium.

6. **Femur:**
   a. Right broken.
   b. Left broken.

7. **Tibia:**
   a. Right broken.
   b. Left broken.

8. **Fibula:**
   a. Right broken.
   b. Left broken.

9. **Humerus:** Three fragments.

10. Right scapula and right clavicle.
    All other skeletal material missing.

Fig. 2 — Burial No. 3

Burial No. 3 (Fig. 2)

Age: Four to six years.
Sex: Indeterminate.
Position: Uncertain, possibly partially flexed. Possible reburial?
Grave Goods: None.

Burial No. 3 was located on the mound floor, within square 20L1, and measuring four feet, five inches from the surface of the mound to the base of burial pit.

The position of the skeletal remains as well as the fragmentary condition of the bone suggests a possible secondary burial. Note the fragment of right maxillary located between the skull and femur fragments. The head in this instance is pointed in a south-south-easterly direction.

Skeletal Inventory:

1. **Calvarium:**
   a. Left frontal broken.
   b. Left parietal intact.
   c. Right parietal broken.
   d. Left temporal typmanic ring broken.
   e. Right temporal fragments.

2. **Face:**
   a. Right maxilla.
   b. Left maxilla.
   c. Trace of pre-maxillary suture present.

3. **Mandible:**
   a. Left portion of mandible present .
   b. Deciduous and permanent dentition.

4. **Femur:**
   a. Fragments or right femur.
   b. Fragments of left femur.

All other skeletal material missing.

Burial No. 4 (Fig. 3)

Age: Fifty-six to seventy years.
Sex: Female.

Position: Partially flexed.
Grave goods: None.

Excavation:

This was by far the most complete and easily identifiable burial of the four found in Mound G. The body had been placed on the right side with the head pointing in a south-south-easterly direction; the knees had been drawn towards the chin so that the body had assumed a semi-, or partially-flexed, position.

The body in this instance rested completely in square 25R2 with the exception of the head which extended into square 20R2. The burial which was located in the floor of the mound measured four feet, seven inches from the mound surface to base of the burial pit. The skeletal material, though fairly complete, nevertheless, was in very poor condition and consequently, crumbled in spite of all attempts to preserve the remains. The skull, however, remained in reasonably good condition and is available for observation.

Skeletal Inventory:

1. **Calvarium:**
   a. Right and left frontals minus orbits.

Fig. 3 — Burial No. 4. Partially Flexed.

b. Right and left parietals.
c. Occipital.
d. Right and left temporals.
e. Right sphenoid.
f. Right ethmoid.
g. Ossicles missing.

2. **Face:** (Missing).
3. **Mandible:** Fragments from right half.
4. **Hyoid:** (Missing).
5. **Cranium:** Plus mandible fragments.
6. **Maxillary:** None.
7. **Teeth:** Maxillary-mandibular (none).
8. **Vertebrae and ribs:** Cervical one and two.
9. **Thoracic:** Two small fragments.
10. **Innominate:** Right and left, no symphsis.
11. **Femur:** Right and left.
12. **Patella:** (Missing).
13. **Tibia:** Right and left.
14. **Fibula:** Right.
15. **Calocaneum:** Right.
16. **Astragalus:** Right and left.
17. **Cuboid:** Right.
18. **Scapula:** Small fragments of acromion process.
19. **Radius:** Fragments of proximal end.
20. **Humerus:** Left.

All other skeletal material missing.

Pottery

The majority of pottery fragments removed from Mound G were in such poor condition that special care was required in laboratory preparation and analysis when handling, cataloging, and classifying this material.

There appeared to be no correlation between pottery types and their respective locations within the mound fill. It is suggested that the pottery excavated in this instance represents an unintentional accumulation of sherds through the process of gathering soil for the initial and secondary construction of the mound.

Of the pottery fragments, three major ceramic types have

been identified: **Madison Plain, Madison Cord Impressed,** and **Denzer Stamped.**[5] A statistical analysis of the ceramic complex of Mound G is as follows:

TOTAL CERAMIC ACCUMULATION

Description	Number	Percent
Rim Sherds	93	16.230
Body Sherds	470	82.025
Base Sherds [6]	10	1.745
	573	100.000

In addition, there were 499 fragments which were too small for classification.[7]

TOTAL RIM SHERD ACCUMULATION

		Percent	Average Thickness	Temper
Madison Plain	48	51.612	6.5 mm.	Grit
Madison Cord Impressed	32	34.408	7.0 mm.	Grit
Denzer Stamped	13	13.980	6.7 mm.	Grit
	93	100.000		

Ceramic Description

Madison Plain (Fig. 4)

Of the 48 grit-tempered, cord-roughened rim sherds excavated from Mound G, only four showed even a casual attempt at surface decoration.

One of the four sherds had as decoration finely incised lines approximately two centimeters long and about 1 mm. thick. These lines had been placed on the inside of the rim, not quite parallel with the lip, and extended an inch and a half down the interior side.

The three remaining decorated sherds possessed tangential cord-wrapped stick impressions beginning at the lip and angling 190° down the interior of the rim surface. The impressions measured, on the whole, one-half inches long, 1/16 to ⅛ inches wide, and were spaced from 3/16 of an inch to one-quarter of an inch apart.

The Madison Plain fragments ranged in color from shades of reddish-brown to black and shades of grey. In terms of rim

thickness, the range varied from a low of 4.2 mm. to a high of 7.8 mm. Several of the rims had a squared-off lip which extended 1/16 of an inch at most over the exterior surface of the sherds.

The Madison Plain proved to be much better fired and constructed than the Madison Cord Impressed, but not quite as well constructed as the Denzer Stamped pottery.

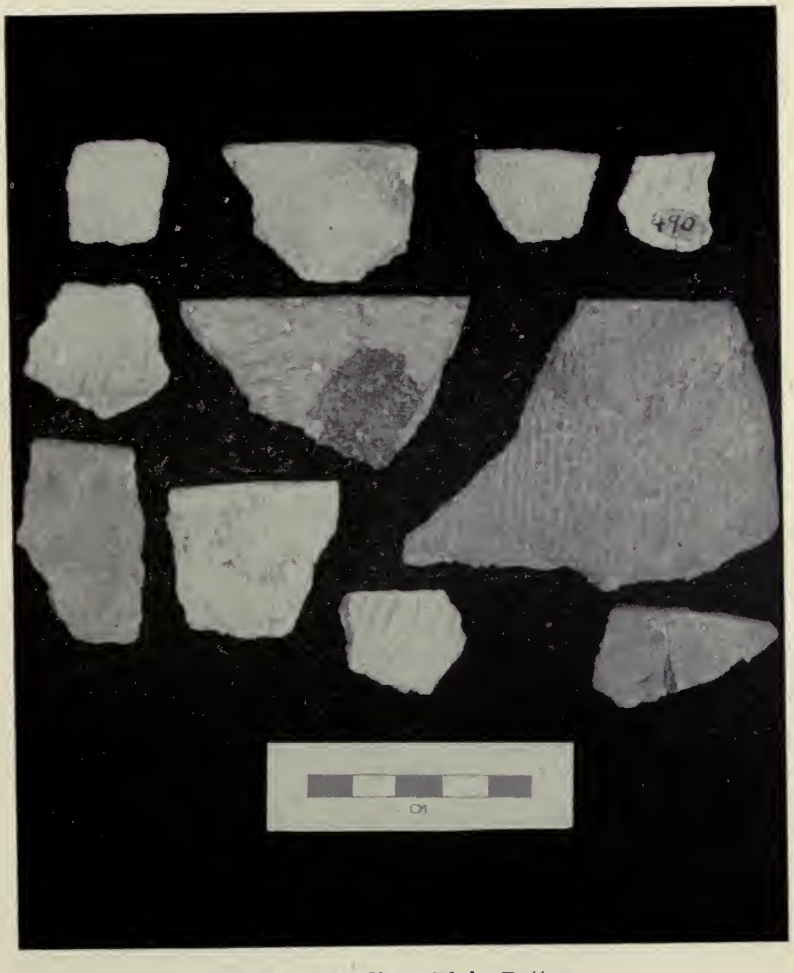


Fig 4 — Madison Plain Pottery.

Madison Cord Impressed (Fig. 5)

Only ten of the thirty-two rim sherds showed the typical twisted horizontal cord impressions placed over a cord-roughened surface. In each instance these sherds were of a smaller diameter than the remaining twenty-two which possessed a single horizontal row of stick impressions one-half to one inch below the lip of the rim.

The twisted cord impressions which ran horizontally along

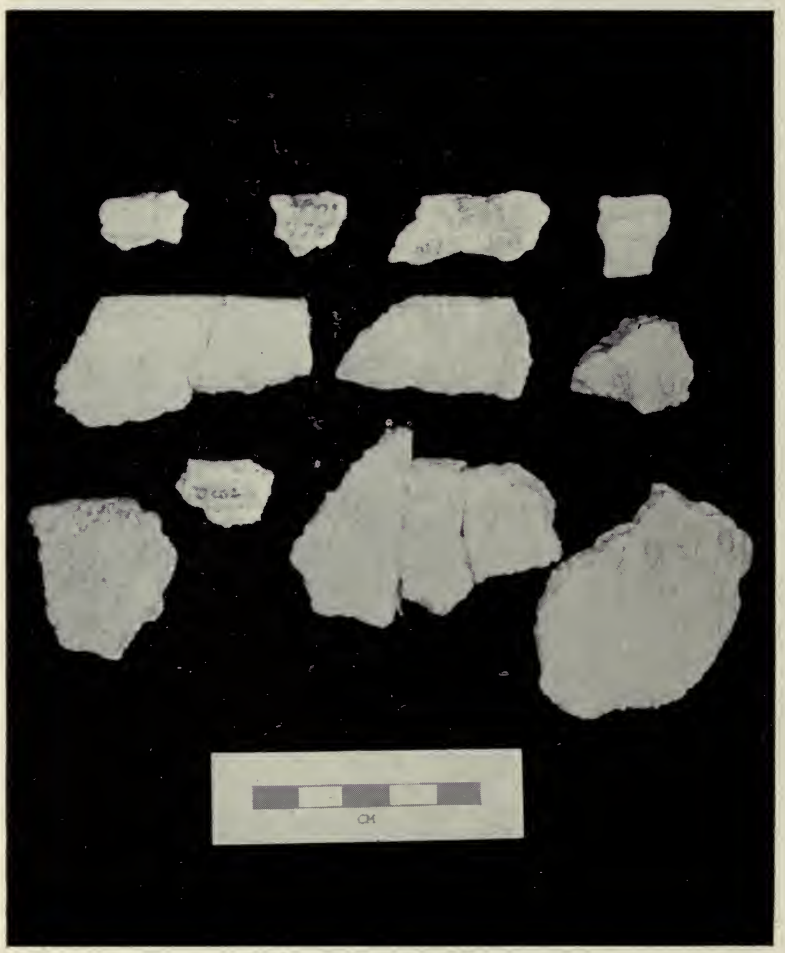


Fig. 5 — Madison Cord Impressed Pottery.

the upper rim of the sherd were occasionally intersected by other shorter cord impressions. The surface decoration often crossed-over and appeared on the interior of the rim of several specimens.

The cord impressions were between 1/32 and 1/16 of an inch in diameter and had from four to six twists to the inch.

Color, almost without exception, ranged from a dark brown to varieties of reddish-brown. The Madison Cord Impressed sherds were poorly constructed and fired, contained a heavier

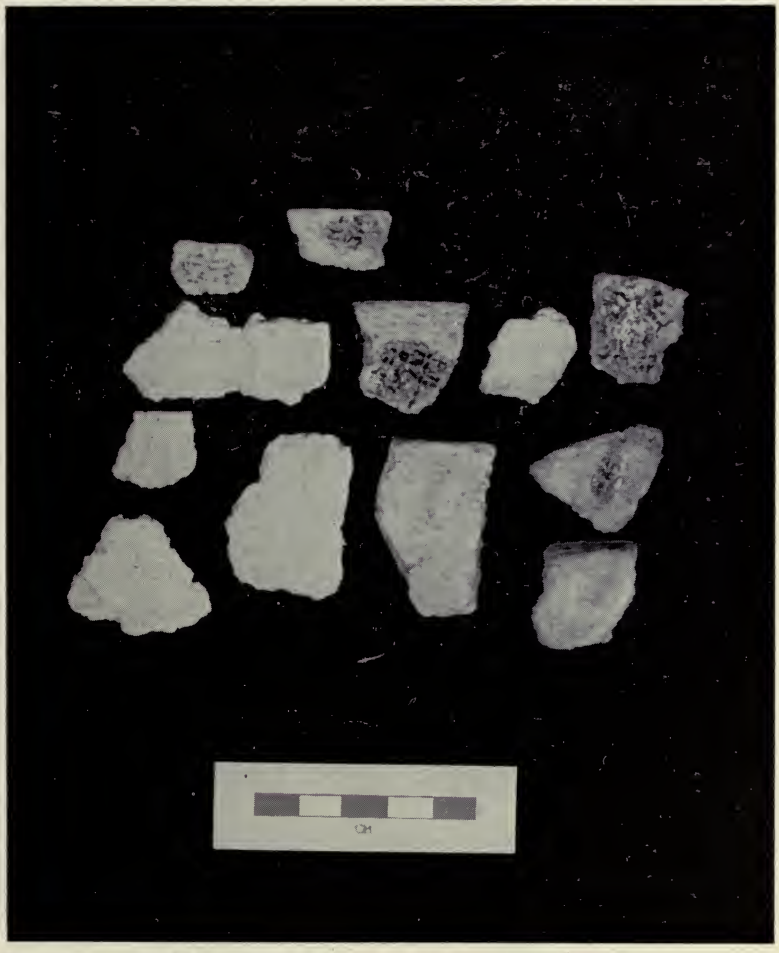


Fig. 6 — Denzer Stamped Pottery.

grit temper than either the Madison Plain or the Denzer Stamped, and tended to dissolve in water and absorb ink during the initial cleaning and cataloging.

Denzer Stamped (Fig. 6)

All of the thirteen Denzer stamped fragments were constructed of a fine grit temper and ranged in color from a light tan to various shades of grey. The sherds ranged in thickness from 5.8 mm. to 8.2 mm.

All, but two, of the specimens were straight-rimmed. These

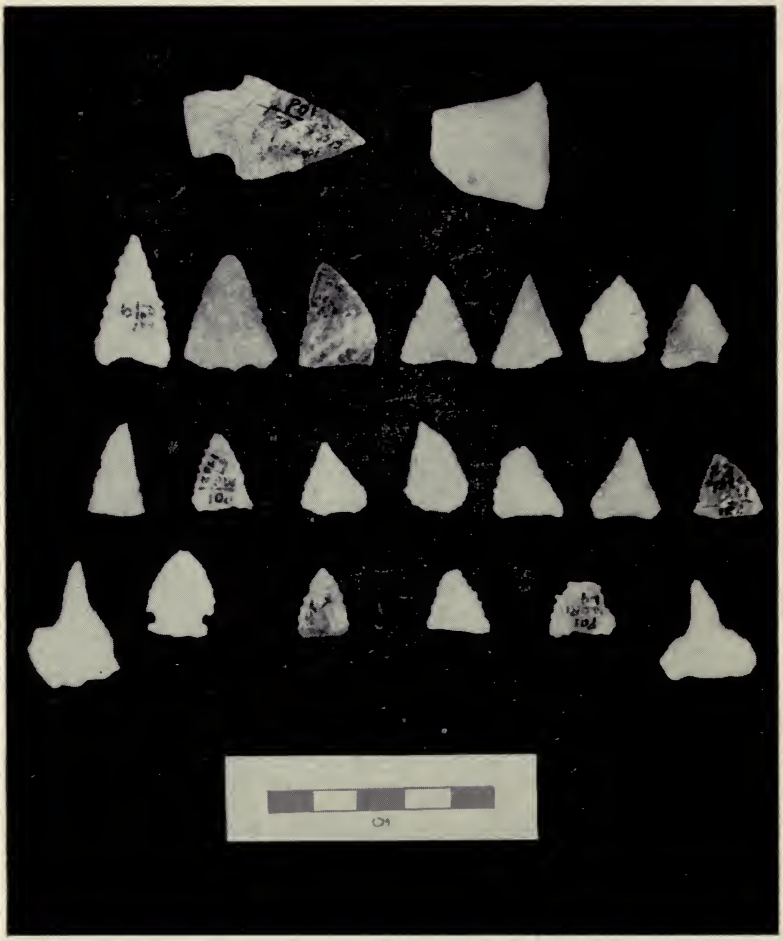


Fig. 7 — Projectile Points and End Scraper.

two sherds had a slight lip which was squared-off and projected 2 to 3 mm. towards the interior side.

There was no evidence of a cord-roughened surface decoration but there were series of cord-wrapped stick impressions running in parallel rows diagonally from the lip and extending onto both the interior and exterior sides of the rim.

The cord-wrapped stick impressions measured from 2 to 4 centimeters in length, 3 to 5 mm. in width, and contained on the average of twelve to twenty individual parallel impressions to the inch. The rows of impressions ranged from 2 to 5 mm. apart.

In addition to the cord-wrapped stick impressions, there were also occasional minute double-circled impressions from one to 2½ mm. in diameter. These circular impressions appear to have been made by a tube-like implement. They were usually placed below the cord-wrapped stick impressions, and did not appear to fall into a pattern.

Projectile Points (Fig. 7)

There were nineteen projectile points recovered from the excavation of Mound G. The majority of the points were of the small triangular variety and had been made from quartz or quartzite. The single side-notched point was of chert. One of the nineteen points was considered unclassifiable. As with the pottery, the points could not be correlated with mound strata, and were considered to be part of the mound fill which had been taken from the immediate area of the mound site.

ANALYSIS

	Type	Max. Thickness	Max. Length	Max Width
1.	Small triangular	3 mm.	30 mm.	16 mm.
2.	Small triangular	3 mm.	18 mm.	14 mm.
3.	Small triangular	4 mm.	21 mm.	16 mm.
4.	Small triangular	4 mm.	16 mm.	14 mm.
5.	Small triangular	3 mm.	17 mm.	13 mm.
6.	Small triangular	3 mm.	23 mm.	16 mm.
7.	Small triangular	3 mm.	20 mm.	14 mm.
8.	Small triangular	3 mm.	15 mm.	11 mm.
9.	Small triangular	5 mm.	20 mm.	17 mm.
10.	Small triangular	4 mm.	25 mm.	20 mm.
11.	Small triangular	4 mm.	14 mm.	14 mm.
12.	Small triangular	3 mm.	14 mm.	13 mm.
13.	Small triangular	3 mm.	16 mm.	13 mm.
14.	Small triangular	3 mm.	21 mm.	14 mm.

14. Small triangular	3 mm.	21 mm.	16 mm.
16. Small triangular	4 mm.	19 mm.	16 mm.
17. Small triangular	3 mm.	8 mm.	14 mm.
18. Side notched	3 mm.	20 mm.	14 mm.
19. Unclassified	10 mm.	40 mm.	23 mm.

Miscellaneous

The following inventory includes a list of miscellaneous artifacts excavated from the fill of Mound G.

Artifact	Number	Material	Length	Width	Thickness
1. Awl	1	Chert	22 mm.	21 mm.	5 mm.
2. Awl	1	Chert	28 mm.	20 mm.	4 mm.
3. Scraper	1	Quartzite	26 mm.	28 mm.	6 mm.
4. Flakes	350	Quartz	———	———	———
5. Shell	54	Fragments	———	———	———
6. Copper	2	Fragments	7 mm.	6 mm.	2 mm.
7. Pipe Stem *	1	Fragment	14 mm.	6 mm.	6 mm.
8. Hammer Stones	2	Granite	57 mm.	32 mm.	———

* Grit-tempered, smooth surfaced, straight stemmed pottery.

Conclusions

Laboratory analysis of the artifacts suggests that Mound G falls in the time period known as the Late Middle to Late Woodland. Wittry's excavation of the Durst Rock Shelter supports this conclusion especially with respect to the small triangular projectile points, the Madison Plain, the Madison Cord Impressed, and the Denzer Stamped pottery.

The burial complex associated with the excavation of this conical mound indicates that corpses of both young and old were disposed of in similar fashion; that is, by the process of interment with a prepared mound structure.

Burials 2, 3, and 4 are without question the oldest represented in the mound, with burial one representing an intrusion after the mound had been recapped. The intrusion in this instance was that of an infant which appears to have died at, during, or shortly after birth. It only requires a suggestion of the imagination on the part of the investigator to present the possibility of intrusion being the easiest means available for the disposal of a deceased infant, who being a non-contributor in a basic hunting, fishing, and gathering society, need not necessitate the construction of a special burial mound.

In terms of position, burials 2 and 4 were flexed, while burials 1 and 3 appear to have been secondary interments expressed by the disarticulated remains. It may be only a matter of coincidence that burials 2, 3, and 4 have heads pointing in a south-easterly direction. The sex of the inhabitants of the mound could not be determined in that only burial 4 was preserved well enough to permit analysis of sex.

The age differential of the burials is interesting, as is the conspicuous absence of grave goods. The positioning of the burials within the mound structure is reminiscent of other conical mounds which are associated with effigy mounds within the State of Wisconsin.

The excavation of Mound G, the laboratory analysis of the artifacts included in the mound fill, and the description of the burial complex all tend to support the suggestion that the Portage County, Bigelow-Hamilton Site I reflects a nomadic, hunting, fishing, and gathering population which frequented the banks of the Wisconsin River during the Late Middle and Late Woodland period.

The occurrence of fresh water clam shells, fireplaces, projectile points, pottery, and charred animal bone fragments, indicates a small game economy supplemented by shell fish. It is also assumed that subsistence gathering of local nuts and berries occurred, with the possible hunting of larger game animals. The absence of large mammal skeletal remains does not necessarily mean that deer and bear were not hunted or eaten.

What remains to be said is that Portage County, Wisconsin, is archeologically fertile. Local collections have produced surface artifacts ranging from copper knives and projectile points to elaborately produced stone drills and polished celts. [8]

The important thing, of course, is the fact that there remain unsurveyed sites and unexplored terrain. This paper has been concerned with a single mound and a single occupation site, located in a Wisconsin County which has experienced remarkably little archeological investigation.

FOOTNOTES

1. This paper is the third in a series of reports on mound sites in Portage County, Wisconsin. The two previous papers were pri-

marily concerned with the surface surveys and mound site redefinition based on earlier studies by G. L. Collie and R. H. Becker. During the summer of 1957, preparations were made for the selection of one of the fourteen mounds in the Bigelow-Hamilton group which would best lend itself for study.

2. The excavation was a combined project under the joint direction of Dr. George I. J. Dixon of the Department of Sociology at Wisconsin State College, Stevens Point, Wisconsin, and Bradley A. Blake, Department of Anthropology, University of Wisconsin, Madison, Wisconsin.
3. Equipment was secured from the State College. Labor was recruited on a voluntary basis and included college faculty as well as college students who were in the area for the summer, Acknowledgement is extended to those persons who donated time and energy for the completion of this project.
4. Appreciation is extended to Dr. L. C. Scribner, D. D. S., Stevens Point, Wisconsin, who through X-ray examination of the dental fragments taken from Mound G, helped establish the approximate ages of burials 1 and 3
5. An excellent recent description of these assigned pottery types is made available by Warren Wittry, **Wisconsin Archeologist** vol. 40, no. 4, 1959.
6. Although there were only ten base sherds identified during the ceramic analysis, they were interesting in that they were grit tempered, smooth surfaced, and measured on the average 32 mm. at the widest diameter.
7. These were not individually numbered, but were counted and assigned to the appropriate square and level. If one wishes to include these fragments in the ceramic inventory, then they would comprise 46.539% of the total ceramic accumulation. This, however, would be misleading inasmuch as the fragments are not all typologically definable.
8. All artifacts and skeletal remains removed from Mound G are presently in the possession of Mr. Clifford D. Swanson, a member of the board of the Stevens Point Chapter of the Wisconsin Historical Society.

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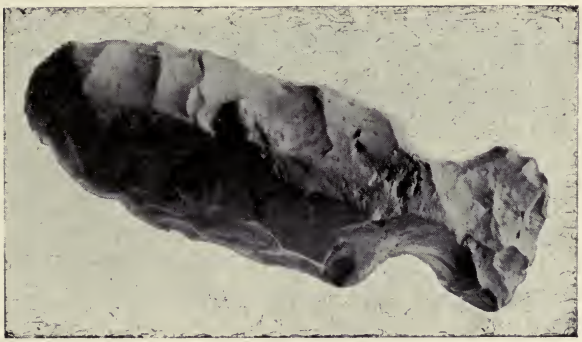
A NOTCHED HOE FROM WISCONSIN

Robert Ritzenthaler



The unusual and intriguing specimen was found by Mr. Herman Isensee near Sparta, Wisconsin. More specifically, it occurred in Section 7, Range 4, Little Falls Township, Monroe County, and was encountered about a foot below the surface. It is of chert rather crudely shaped by percussion chipping and 5⅝ inches in length, 2 inches maximum width, and ¾ inches at thickest portion. It is flat backed and side notched.

Whether to call it a hoe or an adze is the problem. It is relatively small for a hoe, yet the polish due to usage occurs on both surfaces and covering the lower half of the specimen is more suggestive of its use as a hoe than as an adze, in which case only the edge would show wear. Furthermore, its use as a woodworking implement would seem to be obviated by its crudity.

If our assumption that it is a hoe is correct, and with its technique of manufacture suggesting Woodland culture, we may well have here the earliest type of agricultural implement for Wisconsin.

HIXTON SILICIFIED SANDSTONE: A UNIQUE LITHIC MATERIAL USED BY PREHISTORIC CULTURES

James Porter

Introduction

The purpose of this paper is twofold: (A) to describe the megascopic and microscopic characteristics of Hixton Silicified Sandstone and (B) to discuss its significance to archeological interpretations.

In August, 1958, the writer aided Dr. Warren L. Wittry, of the Illinois State Museum, in the excavation of a rock shelter in Gullickson's Glen, 11 miles west of Black River Falls, Wisconsin. The high frequency of a distinctive silicified sandstone, both in finished artifacts and lithic rejectage, prompted a visit to the only known source of this material. A large hill of silicified sandstone, known as Silver Mound, is located in section 35, R. 5 W. — T. 23 N. and section 2, R. 5 W. — T. 22 N., west of Alma Center and northeast of Hixton, Jackson County, Wisconsin (12-13 miles north of the rockshelter). This hill is boomerang shape, measuring approximately one and a half miles in its longest direction. To our knowledge no other source is known which would account for the quantity of sandstone found at the rock shelter and other sites in Wisconsin where the writer has observed what appears to be the same material.

(A) Hixton Silicified Sandstone

General Geologic Background: In order for a lithic material to be of value to archeological interpretations it is necessary to know its approximate natural distribution. Hixton silicified sandstone apparently occurs in only this one area and we shall attempt to demonstrate this by a brief review of the geology of this material.

Hixton silicified sandstone occurs south of the southern limit of Wisconsin glaciation (maximum) being in the northern part of the driftless region of Wisconsin. Rocks exposed at the surface in the vicinity of Silver Mound are Upper Cambrian in age with some exposures of Pre-Cambrian along the

Black River to the east. The Cambrian (St. Croixian series) rocks of this area are predominantly sandstone (Sloss, Dapples, and Krumbein, 1960, maps 1 and 4). Preliminary investigation at Silver Mound indicated that the silicified sandstone resembled the other less rigid sandstone bluffs in structural details. Silver Mound is slightly higher than other bluffs of sandstone in that area, but its resistance to erosion is increased by its extremely rigid lithic make-up (opal-chalcedony cement). From the geologic evidence it appears as if the Hixton silicified sandstone is a unique occurrence of silicified Upper Cambrian sandstone which served as a major quarry source for prehistoric cultures.

The geologic literature contains numerous mentions of silica cement in many formations. What is now known about the origin of silicious sediments indicates that they are not restricted to any one geologic period although more common in certain periods than others (Ireland, 1959, pp. 2-3). When we investigate the distribution of Cambrian sandstones for other possible sources for a similar material we find ourselves restricted to certain areas. Although we find a great area mapped as Cambrian sandstone on lithofacies maps (Sloss, Dapples, and Krumbein, 1960, map 1), we need pay no attention to most of it since the formations which are mapped on lithofacies maps are for the most part buried beneath geologically younger deposits, making accessibility for prehistoric peoples impossible. One of the major areas for surface exposures is Wisconsin and parts of eastern Minnesota, although even in these areas the exposures are restricted to rather narrow belts. What concerns us most is finding all of the deposits that might resemble the silicified sandstone.

From field work in Wisconsin and Missouri the writer has upon occasion found outcrops where minor silicification of the sandstone has taken place. But in no case could the quality equal the Hixton material, nor would the quantity be sufficient to make exploitation profitable to any lithic-using people.

At the suggestion of Dr. Stanley A. Tyler, Department of Geology, University of Wisconsin, the writer contacted Gilbert O. Raasch who had experience with Cambrian deposits

while a student in the Geology Department at Wisconsin.. Mr. Raasch states:

> "Local induration to orthquartzite **(silicified sandstone)** is not uncommon in western Wisconsin Cambrian rocks but only on a very limited scale in comparison with the Silver Mound occurrence and certainly never of a magnitude or quality to furnish extensive quarry sites. The nature of the Silver Mound quartzite, moreover, is sufficiently characteristic to make identification of source almost certain." (Raasch, 1959)

From this evidence it is concluded that the Hixton silicified sandstone is a unique outcrop for the Upper Mississippi River Valley.

Megascopic Description: Hixton silicified sandstone is commonly white, light gray, light brown, or orange brown (white being major color). Dark brown, lilac, cream, and various shades of red are also known. The sandstone is hard (6.5-7), compact, and possesses physical attributes necessary for implement manufacture by prehistoric people. A fresh break presents a sugary appearance, due to the fact that the quartz fractures through the grains as well as through the opal-chalcedony cement. Where grain size is smallest there is a noticeable resemblance to the surface features of chert. Worked edges of some artifacts show a drabness (not characteristic of the natural material) which is interpreted as use-scour of fresh quartz grains. Weathered surfaces observed in place on the bluff near Hixton retain some of the dazzling sparkle of a fresh surface even though partially covered with lichens. Silicified sediments from the Rocky Mountain area are identical megascopically, but it is thought that more knowledge of original deposits teamed with petrographic analysis could distinguish between the sources. Megascopically Hixton silicified sandstone is easily sorted from the more common **true** quartzites found near Baraboo, Waterloo, and in Barron County, Wisconsin.

Microscopic Description: Ten thin slices were cut from the silicified sandstone — four from samples taken at the source near Hixton and six from flakes excavated in Gullickson's

Glen. These sections were made in the same manner as described previously (Porter, 1958, p. 26). The thin sections were studied with a petrographic microscope. Because of the homogeneity found in all slides, it is unnecessary to describe each separately.

Every slide revealed a material composed of sub-rounded to round quartz grains cemented with opal and chalcedony (see plates I & II). Grains range in size from .00075 mm to .0625 mm, with the majority in the range .025-.03 mm. Some quartz grains show undulatory extinction and in many others tiny inclusions can be see (see plate III). The grains are cemented by opal with chalcedony rimming the grains and vugs (see plate IV). Other minerals present occur infrequently and only as tiny grains. These minerals are hematite, tourmaline, apatite, biotite, rutile, clay mineral (?) and in once instance almandite (garnet).

Colored varieties such as light brown, pink, and lilac were included in the sections. The only difference when compared to the white material was the increase in specks of hematite evenly distributed in the opal-chalcedony cement. The color apparently depends upon the amount and thickness of the hematite grains along with the ability of the quartz and opal to scatter reflected light.

For comparisons with other sections of silicified sediments it is suggested that the interested reader view the contributed papers in a publication edited by H. A. Ireland (1959).

(B) Significance to Archeological Interpretations

General: The positive identification of unique lithic materials from archaelogical excavations can be used to study a variety of archaeological problems. This should not be taken to mean that lithic analysis by itself can solve problems. Meaningful identification of lithic materials can aid in shedding light upon problems concerning the movements of people (trade and/or migration). Teamed with precise data pertaining to a unique source it then becomes possible to analyze the lithic preferences through time within and between cultures.

Lithic Rejectage and Provenience Data: Provenience data for excavated material should be kept for all lithic materials excavated, whether it is a finished artifact or what appears to be only rejectage (chips, cores, etc.). When this is done it may suggest channels for further investigation. As an example we can turn to the material excavated from the deposits of the rock shelter in Gullickson's Glen. Dr. Wittry, following preliminary laboratory analysis, kept all lithic rejectage in bags marked with the original provenience data from the excavation. In two separate bags, among the hundreds of Hixton silicified sandstone chips and cores, were two chips of a distinctive chocolate brown chalcedony which is found in natural deposits no further east than the James River Basin in South Dakota and geologically more likely to have come from deposits bordering the Missouri River in the Dakotas (Porter, 1960, pp. 72). One bag was labeled "Unit II, 5-6 feet below datum;" the other labeled "B5, lower occupation zone." A survey of the artifacts excavated from the rockshelter revealed no implements fashioned from the chocolate brown chalcedony. Although this is slim evidence to use for offering an hypothesis concerning trade relationship, hunting ranges, or migration; we must nevertheless account for the occurrence of these two chips in the lower occupation zone since they could not have occurred there naturally. It is expected that when Dr. Wittry has completed his analysis he will be in position to offer an explanation. We hope that other archaeologists in Wisconsin and adjacent states can also identify and investigate the occurrence of Hixton silicified sandstone in their excavations, keeping the provenience data necessary for archaeological interpretations.

Occurrence of Hixton Silicified Sandstone in Wisconsin Sites:

The writer shall point out those sites in Wisconsin where we have observed what appears to be Hixton silicified sandstone. Although this is nothing more than a brief mention in each case it is hoped that those working with these sites might check into the identification and cultural significance of this material.

Through the courtesy of Dr. Robert Ritzenthaler, we were

able to scan the Aztalan collection in the storerooms of the Milwaukee Public Museum. Hixton silicified sandstone was present in both artifacts and non artifactural materials, although not in any great quantity.

The Bell Site near Oshkosh, excavated by Dr. Warren L. Wittry in 1959, contained at least two finished artifacts made of the Hixton material.

From surface collections on and around the Boat Works Site along the Yahara River in Madison, the writer picked up one graver and a few chips of the Hixton silicified sandstone. Although provenience data for this occurrence is worth little we at least know that the Hixton material was found in the area.

we at least know that the Hixton material has found in the area.

During Highway Salvage surveys conducted by the writer in 1959, Hixton silicified sandstone was found on the surface and excavated at a site approximately 9 miles east of La-Crosse. This excavation was a series of test pits and was not continued due to the lack of sufficient data to qualify as a salvageable site under Wisconsin's Highway Salvage plans. The material recovered from the test pits is on file at the State Historical Society in Madison as are the field notes. There was a good proportion of Hixton silicified sandstone present. This is not surprising, since the site is much nearer the source in Jackson County than are the other sites mentioned.

There are no doubt other occurrences that might shed light on the movements of particular groups of prehistoric people. Unfortunately the label quartzite has been attached to the material in some cases (see Barrett's report on Aztalan) and in reports where we suspect Hixton silicified sandstone we are hampered by the lack of descriptions that could aid us in plotting the distribution of this unique lithic material.

Conclusion. Archaelogists use distinctive attributes (shapes, decorative elements, etc.) found on pottery to aid in problems of archaeological interpretations. Proper detailed indentification of lithic material and tracing of sources can establish a base from which we can approach a number of archaelogical

problems with a fresh battery of facts. In addition, these lithic facts are not hampered by time as pottery is, since man has apparently long been a user of lithic material. Much of the lithic material available on the earth's surface at present was also available during most of man's evolution. What materials man used and why he used them were mainly determined by culture. Once we know **what** he used and **where** he may have obtained it we can begin to organize the data so as to explore the questions of **why?**

With Hixton silicified sandstone we have attempted to demonstrate its uniqueness as a lithic material, bring its existence to the attention of archaeologists, and briefly mention the potential to archaeological interpretation.

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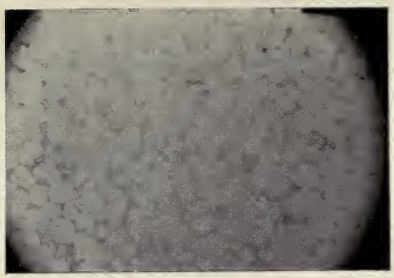
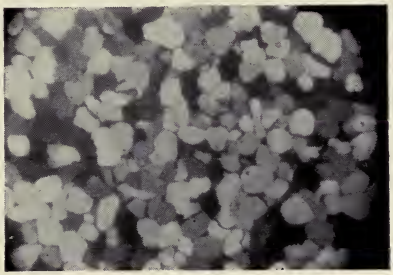
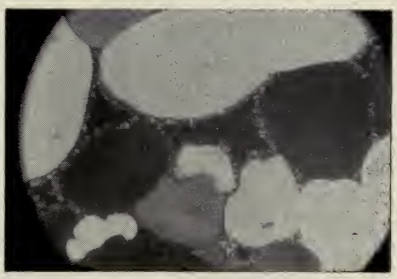


I — Quartz Grains with Opal-Chalcedony cement. Slide SM-59-11, 60X, plane polarized light.



II — Same as I; crossed nicols.

III — Inclusions in Quartz Grains are Common. Slides SM-59-10, 210X, plane polarized light.



IV — Illustrates Chalcedony Rimming Grains and Vugs filled with Opal. Slide SM-59-4, 210X, crossed nicols.

CACHE OF 29 BLANKS FROM MARINETTE COUNTY

Paul Koeppler & Robert Snyder

We had been deer hunting in the Lake Noquabay area last fall. This is also my old Indian relic tramping grounds from when I first started collecting some 27 years ago. Every time I am in the neighborhood, I get the itch to visit some of my old sites.

November 20, 1960 was a beautiful day, too nice to be sitting in the woods. Robert Snyder and I had the same idea. Without saying a word we were on our way to see our good friend, Eric Olson, who owns a farm on Lake Noquabay outlet. N. W., Section 25, R20 T32, Stephanson Township, Marinette County. He invited us in to his home to see the addition to his collection, a large game ball and some arrow points, which he found in his plowed field this fall. This field is about ¼ mile long, running slightly down hill from the river bank. With Eric's permission, we headed for the field, Bob taking the lower end, and I the high ground near the river. We were nearing the center of the field when we both sighted, what at first looked like an arrow head about 20 feet away. Closer inspection revealed it to be a large chert blank about 2 inches long, but with another one lying directly below it.

Having picked up the two pieces and wondering just why the two were still that close together after 40 years of plowing. We saw another partly exposed, about one foot away.

After about half an hour, we had uncovered 23 such blanks with our hands, in an area about 2 feet square. These were all above the plow zone and didn't tell the story I was looking for. By this time we had drawn the attention of Eric and he came over to see what we had found. He told us in what direction the field had been plowed, so I moved over to where this collection had been plowed out. In digging to the plow zone I uncovered 3 more that the plow had missed by a fraction of an inch. They were laying flat and it is very possible that the other 26 were in this same position.

THE ERICKSON MOUND GROUP

Peter L. Larson

This site is located near the town of Arkdale, Wisconsin, on the Erickson farm. The existence of this mound group was brought to the attention of Mr. Joseph Brossard and myself by Ed Knupp, Jr., of Arkdale who lives on a farm adjoining the Erickson place.

The mound excavated is one of a group of at least three mounds in the immediate vicinity. They are located in an area grown over with scrub timber and heavy brush which makes the location of earthworks quite difficult. Mound 1 is on high ground about 75 feet from Big Roche A Cri Creek; the other mounds are also close to the creek itself or the old creek bed. This site is located in the N E quarter of the N W quarter, Section 14, Township 18, Adams County, Wisconsin. Mound 1 is an oval, dome-shaped mound while the other two are linear and much larger. The existence of other associated mounds is possible but will remain conjectural until a thorough search of the area is made.

I wish to thank Mr. Erickson for his cooperation in letting us conduct excavations on his land. After obtaining permis-

sion to carry on our work we started our dig on Mound 1. This mound measures 30 feet north to south, 24 feet east to west, and 40 inches from the original ground surface. At all points along the cut the original ground surface was very much in evidence due to a very distinct humus line. The mound fill was a mixture of sand and organically stained sand, giving a mottled black and tan appearance.

Upon reaching the center of the mound we expanded our trench to about 36 inches in width for a length of about 40 inches. We then extended an exploratory trench to the west for a distance of 7 or 8 feet. In the exact center of the mound extending about 10 inches below the original ground surface was a burial pit, a circular pit about two feet in diameter. The outline of this pit was difficult to trace due to the nature of the material used in the construction of the mound.

It is evident that the burial pit was dug first and the burial placed in it and covered before the mound was placed over it. I give as evidence for the preceding statement the fact that the original ground surface was evident up to the edge of the pit.

The burial itself (Fig. 1) was a tightly grouped bundle reburial consisting of: 2 femorae, 2 patellae, 2 tibiae, 1 fibula, 2 ulnae, 2 radii, 2 humeri, 1 rib fragment. The comparative sizes of the skeletal material indicate the probability that the burial represents one individual. There is also an indication that the bones of one of the lower legs was articulated, at least the positions seem to indicate this.

The mound forms found in this group are typical of some of the forms found in mound groups of the Effigy Mound Culture of the Late Woodland horizon. The mound excavated also possesses some of the characteristic traits of this culture group. These are: a single reburial deposited in a centrally-placed, sub-floor pit. [1]

There were no grave goods in evidence. The only artifact found was a broken stemmed scraper found in the fill.

On the basis of the evidence presented in this paper I would suggest that this mound group may be assigned to the Effigy

Mound Culture of the Late Woodland horizon in Wisconsin.

[1] The Effigy Mound Culture of Wisconsin by C. W. Rowe. Milwaukee Public Museum Publications in Anthropology No. 3

TRUNCATED-BARB POINTS FROM DODGE COUNTY

Robert Ritzenthaler

Over the years a distinctive type of point has been found by collectors in the Mud Lake area, Portland, Shields and Lowell townships, in southern Dodge County. Commonly called "Clipped-Wing" points by collectors because of the truncated barb, they are also characterized by a basically triangular shape, slightly incurvate sides, serrate or sawtooth edges, side-notches, and straight or convex base. They are usually of chert and fairly small: an inch and a half in length is about average. Illustrated here are examples from the Paul Scholz and Phil Wiegand collections.

It is likely that this type occurs outside of Dodge County, and we urge you to re-examine your collection and report to the editor any examples from Dodge County or elsewhere.

PAUL SCHOLZ COLLECTION

PHIL WIEGAND COLLECTION
Found in Portland Township West of Chub Lake

BOOK REVIEW

MOUNTAIN WOLF WOMAN, SISTER OF CRASHING THUNDER: The Autobiography of a Winnebago Indian. Nancy Oestreich Lurie, Editor. The University of Michigan Press, Ann Arbor, 1961. 142 pages, 15 illustrations.

In 1926 Dr. Paul Radin published an autobiography of a Wisconsin Winnebago man entitled CRASHING THUNDER. Both a popular and anthropological success, it called attention to the possibilities of the autobiographical technique in delineating both personality and culture.

MOUNTAIN WOLF WOMAN is an excellent companion piece to this in presenting 75 years in the life of a Winnebago woman, in fact the sister of Crashing Thunder.

This is an important document of the changing ways and accompanying problems of the American Indian, and is particularly recommended to those interested in the Wisconsin Indians.

Dr. Lurie is a long time member of the Wisconsin Archeological Society and a native of Milwaukee. The Society extends its congratulations to Dr. Lurie for her production of an important book. — Robert Ritzenthaler

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BOOK REVIEW

The Illinois Archaeological Survey, which was founded to promote the conservation of archaeological sites in Illinois and the dissemination of information about the Indians of the state, proudly announces the publication of its first bulletin entitled:

ILLINOIS ARCHAEOLOGY

This is an authoritative, up-to-date summary of over 10,000 years of prehistory and early history of Illinois. Each chapter is written by a well-qualified archaeologist and is illusttrated by an excellent drawing of artifacts and Indian life by Miss Nancy Engle of Southern Illinois University.

The table of contents includes:

The Paleo-Indian Period by Howard D. Winters, Southern Illinois University.

The Archaic Period by Howard D. Winters, Southern Illinois University.

The Early Woodland Period by Melvin Fowler, Illinois State Museum.

The Middle Woodland Period by John C. McGregor, University of Illinois.

The Late Woodland Period by Moreau S. Maxwell, Michigan State University.

The Mississippian Period by Joseph R. Caldwell, Illinois State Museum.

The Historic Period by J. Joe Bauxar, Rickford College.

Anyone interested in archaeology and early history of Illinois will want a copy of this bulletin.

Copies may be obtained by sending $1.00 for each, to the Illinois Archaeological Survey, 137 d Davenport Hall, University of Illinois, Urbana, Illinois.

— Elaine Bluhm

THE WISCONSIN ARCHEOLOGICAL SOCIETY regretfully records the death of Mr. William Andrew on May 26th in Phoenix, Arizona. Mr. Andrew was a longtime member and a past President of the Society. He was an enthusiastic member and collector and we shall miss him.

THE SOCIETY gratefully acknowledges the gift of Mr. Kermit Freckmann of his library of Wisconsin Archeologists. Some will be kept to fill in our missing numbers; others are available for sale by writing Mrs. Phil Wiegand, 1276 N. 63rd Ct., Wauwatosa, Wis.

The following NEW MEMBERS for 1961 bring the total membership to 501:

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Unusual for its length (11-3/16ths inches) combined with its serrate tang. Found on the southwest shore of Lake Tichigan, Racine County. Keith Hensel collection.

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With unusually long flute for Clovis type. Found five miles west of Strathroy, Middlesex County, Ontario, Canada. Kirk Whaley collection.

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LRBS
HCJ

THE WISCONSIN ARCHEOLOGIST

USES OF NATIVE HERBS BY WISCONSIN INDIANS. Dr. Herbert W. Kuhm. 97

A FLUTED POINT FROM JEFFERSON COUNTY Robert J. Salzer and Mark Stock 133

MINUTES OF THE THIRTEENTH ANNUAL MEETING OF THE WISCONSIN ARCHEOLOGICAL SURVEY 136

RADIO CARBON DATES FOR AZTALAN Robert Ritzenthaler 139

INTERESTING WISCONSIN SPECIMENS 140

COLLECTOR'S CORNER 141

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THE WISCONSIN ARCHEOLOGIST

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MILWAUKEE, WISCONSIN, SEPTEMBER, 1961

USES OF NATIVE HERBS BY WISCONSIN INDIANS

Dr. Herbert W. Kuhm

Introduction

The employment of wild herbs as remedies has been a cherished pratice of sick humanity whether savage or civilized from the earliest times. The uses of native herbs by the aborigines of America were extremely varied, differing with individual tribes and their own botanical environment. The Indians came to know uses for almost every wild, non-poisonous plant.

From the herbal point of view there is an interesting interval when the early explorers and commercial adventurers along the New England shores were giving way to the settlers, who came to build homes, and established more or less uneasy contacts with the Indians. The Plymouth settlers found herbs familiar to England, like parsley, anise, pennyroyal, sorrel, watercress, liverwort, wild leeks, a hollow-leaved lavender, and "many more sweet herbs delightful to the smell, whose names we know not."

These colonists owed much of their knowledge of the uses of native American herbs to their Indian neighbors. In a few instances, however, the Indians were on the receiving end. Early American history tells us that Captain John Mason was the first to bring catnip to America and plant it in an herb garden in Newfoundland. Soon after our early settlers planted catnip in Salem they taught the Indians how to brew and drink a strong catnip tea. The Indians took to this native drink with genuine enthusiasm and claimed that it induced sound and restful sleep. To this day the tea has remained a favorite drink with many of the surviving tribes.

Descriptions of how the Indians of America used plants are to be found in the journals of 17th and 18th century travelers and botanists such as Mark Catesby, Francois Andre

Michaeux and his father, Andre, and Peter Kalm, a Swedish botanist and pupil of Linneaeus, who published **Travels into North America** in 1770.

In another category come reports of ethnobotanists. Some of these were compiled and published by the Smithsonian Institution, which sent out ethnologists familiar with plants to study those used for foods and medicines by the Ojibwe, Choctaw, Tewa and Navajo tribes and the Indians of the Missouri Valley and other localities. The material they gathered evidences the vast skill of the Indians in the art of healing.

The aborigines of Wisconsin were dependent upon their immediate environment. It therefore follows that a considerable portion of the Indians came to enjoy from very early times a reputation from special knowledge in the remedial properties of wild plants, including native herbs.

A very exhaustive study of the uses of plants (known as ethnobotany) by the aboriginal inhabitants of Wisconsin was made by Huron H. Smith, Curator of Botany, Milwaukee Public Museum, from 1917 to his untimely death in 1933. He was especially fitted for this research due to his unusual knowledge of botany and his aptitude in learning Indian languages. Taking up the subject tribe by tribe, several excellent treatises of the ethnobotany of the Ojibwe, Menomini, Meskwaki and Forest Potawatomi Indians of Wisconsin came from his pen.

When Smith undertook the ethnobotanical study of these tribes in 1920, he lamented the fact that no thorough work in this field was done earlier, since by 1920 there were few Indians alive who retained much knowledge of food and medicinal uses of wild plants. Further, because of the sanctity of most of their medicinal knowledge, it was difficult to obtain full information of the uses of plants as medicines.

Attesting to the thoroughness of his research, Smith, in his study of the uses of native plants by the Menomini of Wisconsin enumerates 120 plants which the Menomini employ for medical purposes. Forty-five plants are used as food, eight to obtain dyes and seventeen for use in tanning, love charms,

sacred or ceremonial and for other purposes. He found within the limits of the reservation 148 more plants of which these Indians, so far as he could learn, made no medicinal use.

Smith regarded the Ojibwe (Chippewa) as probably the best informed and the strictest observers of the medicine lodge ceremonies in the country. He held their knowledge of plants both in their own environment and far away as probably the best of any group of Indians. Further, he found that their name for an herb was usually descriptive. Their name often tells what a plant looks like, where it may be found, some peculiar taste or property, or its chief use. Often a termination is added signifying the part of the plant used, such as the wood, the leaf, the flower, the root, or the berry or fruit.

More recently, Dr. Robert E. Ritzenthaler, Curator of Anthropology, Milwaukee Public Museum, made a study of the inordinate amount of attention given to health and healing by the Chippewa Indians of Wisconsin. The major portion of his data was obtained at the Lac Court Oreilles reservation during three summers of field work carried on in 1941, 1942 and 1944. The resultant findings of this project were summed up in his monograph, "Chippewa Preoccupation with Health," issued in December, 1953 (See Bibliography).

Dr. Ritzenthaler noted that "whenever primitive peoples come into direct contact with Western Civilization the result is a sharp decrease in the native population. Factors responsible for this include conquest in which actual slaying occurs. . . . The chief cause of native depopulation resulting from a contact situation, however, lies in the field of health. The introduction of new diseases to a people lacking immunity to them is perhaps the chief cause. . . . The introduction of new foods, clothing and shelter have also had their effects on native population. The destruction of a native economy often meant that the foods of the conqueror were substituted, and frequently it was the inferior foods, or proper foods used improperly resulting in an unbalanced diet." (Note: see the first two paragraphs of "Miscellaneous Uses of Herbs.")

To the Indian the term "medicine," or rather its equivalent in his own dialect, does not necessarily mean a remedy. It

may imply a cure; but it also includes magic, witchcraft, spiritualism, prophecies, visions, or anything savoring of the uncanny, the supernatural, the inexplicable, or the mysterious; and it is also applied to anything which the Indian considers luck, fortune, or fate. Moreover, he has his good and bad medicine, and the word is used as an adjective to describe anything of a mysterious nature or anything believed capable of influencing his fortunes, acting as a charm, putting him in communication with spirits, interpreting his dreams, or possessing occult powers. Thus he has his medicine dances, medicine moccasins, medicine lodges, medicine bundles, medicine weapons, etc.

When we realize that a very large proportion of Indian remedies are of a magical or occult character we can readily understand why it is so difficult for a white man to differentiate between the Indian's medicines, charms, fetishes and proxies. Among some tribes, to be sure, the use of herbs, roots, and other vegetable specifics is prevalent, and, in many cases, these Indians possess a very extensive and thorough knowledge of the medicinal properties of such things.

According to Densmore, the Ojibwe, more than any other tribe, believed in the use of "charms." These were of two classes, i. e., charms that comprised several units of materials, and charms consisting only of herbs. Into both classes there entered the belief that the supreme test of the power of a substance was its ability to act independently of its material presence. Thus an herb applied externally might cure the bite of a reptile, but it was considered evidence of great power if any herb carried in a packet could protect a man so effectively that he could not be bitten by the reptile. The old-time Ojibwe appear to have believed that matter has two sorts of properties: one tangible and the other intangible. The medicine men, through their dreams, learned the intangible as well as the tangible properties of matter, their use of the former being designated as "charms," or included in the general term of "medicine."

Certain herbs were believed to cure the sick and also to act as "charms." Evil as well as good was said to be accom-

plished by these means and the Ojibwe had certain antidotes to counteract evil charms.

Herbs were used as "hunting charms," the powdered roots or the fine root tendrils being smoked in a pipe with tobacco or with red ozier bark. The smoke of the dried, powdered root of New England aster was said to resemble that of a deer's hoof, and to be very penetrating. As the hunters followed a deer's track they occasionally sat down and smoked this herb, and it is said that before long the deer came toward them sniffing the air.

Two herbs were used by the Ojibwe as "fishing charms," namely sweet flag and wild sarsaparilla. The roots of these plants were dried, grated very fine, and a decoction made of the two. This was sprinkled on fish nets and allowed to dry before the nets were put into the water as a medicine to attract fish.

Medical Uses of Herbs

The Indians used herbs to treat fevers, venereal diseases, liver and kidney troubles, and cancer. As might be expected, with little heat in their habitations there was much gout and rheumatism, many colds, catarrhs and sore throats, frequent pleurisy and pneumonia. In the absence of sanitation there were fevers, sores, ulcers and even malaria. Ailments were manifold among the women, who often died in childbirth. In addition, there were situations which required sedatives, heart stimulants, hemostatics, emetics and cathartics. Diorrhea was prevalent, necessitating astringents. Hence the women sought the curative herbs known to be specific cures for these afflictions.

The active ingredient of an herb was often bitter and nauseous. Hence it is quite common to find the various medicinal teas seasoned with an ingredient added merely to mask or disguise some unpleasant taste resident in the real remedy. Wild ginger is a common and universal seasoning agent among Indians.

In some types of diseases they use injections of medicines, filling an animal bladder or fish sound (the swimming bladder) with the medicine and tying at the neck a hollow bone.

With this primitive yet effective syringe they force liquid medication into the body, either vaginally or rectally. This syringe is made from the bladder of a deer or bear, into the neck of which is bound a two-inch hollow goose or duck bone. This is tied on with sinew. By compressing the bladder-bulb, the herbal liquid is forced through the hollow bone nozzle into the orifice to be treated.

Indian tea is the usual form of medication except for external applications. External inflammations are treated with lotions, salves, or poultices. For internal ailments the ingredients for medicinal teas are steeped in lukewarm water. Doses usually consist of copious draughts of the infusions of the herbs. Rarely are small doses used. Where some of these herbal remedies are made as lukewarm infusions, others are prepared by boiling.

Miscellaneous Uses of Herbs

Relative to the uses of herbs as foods, Saunders states that "all the familiar vegetables and fruits of our kitchen gardens were once wild plants; or, to put it more accurately, they are the descendants improved by cultivation and selection, of ancestors as untamed in their way as the primitive men and women who first learned the secret of their nutritiousness. Though now largely neglected, many of these plants formed in past years an important element in the diet of the aborigines, who were vegetarians to a greater extent than is generally suspected, and whose patient investigation and ingenuity have opened the way to most that we know of the economic possibilities of our indigenous flora."

This is borne out by Huron Smith's studies of the Menomini. Smith states: "In the early history of the Menomini, they made good use of nearly every native plant that was edible. Many old Menomini took pride in telling about the palatable dishes they used to make from native herbs and berries. In aboriginal times, they say, the food of the Menomini was closer to nature, and that their food then was the same as medicine, too, in that the acids, salts and minerals occurring in nature were found in their food. The old Menomini explains that now that they have taken up the use of the white

man's food, they have also inherited the white man's diseases."

Herbs played a minor yet important role in the tanning of hides by the Indians. Much of the tanning is not done with vegetable matter, but with animal and mineral matter, yet there are roots and herbs used in the preparation of skins with the fur left on, to prevent moths and insects from eating off the hair.

Herbs served the Indians as smoking media, with widely varying usage. The Ojibwe used the florets of Yarrow in their ceremonial smoking. Lobelia, on the other hand, furnished the Meskwaki (Fox) with a purely ceremonial "tobacco" which is never smoked but used solely as offering, and was strewn over a grave in their funeral ritual. The dried, powdered roots of New England aster and wild aster, or the dried seeds of yellow pimpernel, were smoked in a pipe by the Ojibwe as a "charm" to attract game on the hunt. As substitute for kinnikinnik, the Sioux were known to smoke white sage, while the Meskwaki added ripe columbine seed to their smoking tobacco for added aroma.

As simple beverage teas, various herbs were brewed including catnip, mountain mint, peppermint, rosemary, wild bergamot, wild mint and wintergreen. Many Indians preferred these native herbal brews to oriental "store" teas.

One of the chief sources of thread for fine sewing was spreading dogbane, resorted to by the Ojibwe and both the Forest and Prairie Potawatomi tribes. This herb furnished a strong, slender fiber unexcelled for sewing the fine beadwork they applied to buckskin.

In a miscellany of herbal uses, one might add the dyeing of rushes with bloodroot, butterfly weed, or black-eyed susan; the weaving of mats from blue flag blades; the use of mandrake as an insecticide, and many others. But we have recorded these in notes that follow.

Harvest and Storage of Herbs

In Indian lore the history of medicines is inextricably bound up with their religion. Their medicine men and women understand that there is a proper season for gathering the various medicines, when the medicinal principles are most potent,

and know that this period may be short, of only two or three days duration, as for instance just before the plant goes into bloom. They will usually stop whatever else they may be doing to go out and dig or procure the medicinal herbs, if the time is ripe. They have learned to recognize these periods in their own way and proceed accordingly, knowing there is a right time for harvesting herbs, when they contain the maximum amount of essential oils on which the flavor and fragrance depend. That moment approximates the time when the buds open into full flower; in fact, some plants even increase the amount of their inherent volatile oils at that time. The mints are reputed to be richest in these oils when they come into full flower. Delay in harvesting will result in a loss of these essential oils. They must guage the proper time to gather the plant part; if premature, the medicinal qualities are inert or undeveloped, and if tardy, they may have been dispersed.

While herbs for medicine might be gathered at any time, it was customary to give special attention to this work in August, when the plants were fully developed and most varieties were in blossom. Roots were gathered in the spring and fall, and bark in summer when the sap was in the stems. Tobacco was always placed in the ground before roots were dug, the tobacco first being offered to the cardinal points, the zenith, and the earth. The same procedure was followed before removing bark or taking leaves or flowers for medicinal use. The person gathering the substance talked in a low voice, saying the substance was intended for a good purpose, that no more than necessary was being taken, and asking that its use might be successful.

There are certain inflexible rules about gathering medicinal herbs that are implicitly observed, especially the chanting of essential songs. The Forest Potawatomi and the Meskwaki still use the necessary songs for the digging of the plant roots, and observe all the ancient ceremonial forms in acquiring their medicinal materials. They consider that the plant roots are the hairs from their Grandmother, the Earth, and that the ceremonial gathering of these medicines gives them their potency.

such gathering requires special songs, and also the placing of tobacco in the hole that is dug. This is a sacrifice to the culture hero, to Grandmother Earth, and to the ruler of the universe, all of whom are asked to lend their strength to the medicine. The Ojibwe also chant the songs essential to digging medicine roots. As with other Algonkians, the Ojibwe place tobacco in the cavity from which they dig the root, as an offering to Grandmother Earth, to Winabojo, and to Gshe Manido, praying in song to these deities to make their chosen medicine potent.

In treating an illness, the medicine man or woman, after the diagnostic dream, goes to gather the herbs. When he finds the proper plant he starts to chant a song, telling Grandmother Earth why he has chosen this root or herb and how he intends to use it, at the same time asking that she lend her power to the medicine that it may heal. It is deemed necessary to tell this to Grandmother Earth so that she may understand and not be displeased. An informant gave Huron Smith a specimen song, which translated means: "I am inserting my hand in your bosom, Grandmother Earth, to get this root." This is repeated four times, then the name of the medicine is spoken and Grandmother Earth is told what it is wanted for, that she may approve and lend power to the herb. Then he digs or plucks the herb from Grandmother Earth's bosom, or "pulls the hairs from her head," as some have it. In the cavity, he places an offering of tobacco, as a propitiation to Grandmother Earth.

When applying the remedy, the same song for the herbs must be sung, and the patient makes a gift when he is cured. The medicine man or woman then tells the patient what it was that cured him, how it was combined, and what song to sing while gathering it.

Most Indian remedies are combinations of roots and herbs. As they represent it, one plant is one power and has one unit of strength, so that many of their remedies are combinations of as many as nine to twelve different herbs. More herbs represent more strength and the medicine becomes more powerful with the increase in numbers.

After the roots, or whatever parts of the plants desired for medicines are collected, they are taken to the home and carefully washed, sun dried, and preserved for future use. Most of the medicine men have a special grinding bowl, or mortar and pestle, by means of which they reduce the medicinal roots or other parts of the plant to a powder. They often immediately mix the various ingredients of a medicine together. Such medicine is then tied up in a bit of cloth, tied with cord and placed away in storage ready to steep for use. One might suppose that a great chance of error would arise in identifying these various mixtures, but the acute sense of smell or taste always indicates the particular remedy at hand.

Following is an alphabetical listing of native herbs, their botanical Latin nomenclature, and the uses made of them by the various Indian tribes in Wisconsin:

ANEMONE **(Anemone canadensis)**

The Ojibwe eat the root of this plant to clear the throat so they can sing well in the medicine lodge ceremony, — a sort of throat lozenge.

ANGELICA **(Angelica atropurpurea)**

This herb is a favorite medicine with the Menomini. The roots are cooked and pounded into a pulp. Then some bruised leaves of Canada wormwood are peppered over this pulp. With this mass and a piece of cloth, a hot plaster is made that the Menomini claim is good for any pain in the chest or body. They also use it to reduce local swellings. It is applied to the side of the body opposite the pain. This is done here because it is believed to draw the pain through to the surface where it can make its escape.

BALM OF GILEAD **(Populus candicans)**

The Menomini boil the resinous buds in a fat to make a salve for the dressing of wounds and to put up the nostrils to cure a head cold.

BEDSTRAW **(Galium concinnum)**

The Meskwaki brew the whole plant to make a tea for bladder and kidney trouble. The tea is also used as a cure for ague. The Ojibwe make a medicinal tea of the species

called small bedstraw (Galium trifudum) for treating skin diseases such as eczema, ringworm and scrofula.

BELLWORT **(Uvularia grandiflora)**

Like the herb angelica, bellwort was similarly used by the Menomini to reduce swellings. The Ojibwe, however, use the root for stomach trouble. Two further uses were made of this plant's roots by the Forest Potawatomi. In an infusion, it is used to cure a backache. When boiled down and added to lard it is used as a salve to massage sore muscles and tendons.

BLACK-EYED SUSAN **(Rudbeckia hirta)**

The Forest Potawatomi name for this herb signifies "black eyeballs." They use its disk florets as a yellow dye material. The disk flowers are boiled with rushes to give them a yellow color and to afford some variation in the color of the woven mats. Medicinally they use the root to make a tea for curing colds.

BLACK MUSTARD **(Brassica nigra)**

The Meskwaki ground up the seed of this common herb and used it as a snuff to cure a head cold.

BLACK SNAKEROOT **(Sanicula marilandica)**

The Meskwaki powdered the thick root stock to furnish a drug which was used as a bitter tonic. The Ojibwe used a poultice of a pounded root as a cure for snake bite, including that of the rattlesnake. They consider it a very potent remedy. They also make a root tea that is used to cure fevers of various kinds.

BLOODROOT **(Sanguinaria canadensis)**

This common herb was popular with most Wisconsin tribes. The Meskwaki considered it a great medicine, often adding it to other medicines to strengthen their effect. Among the Meskwaki, the root is chewed and the spittle put upon burns to relieve the pain.

The Forest Potawatomi steep the root for an infusion which is used to cure diphtheria, which they recognize as a disease of the throat. The Ojibwe and the Forest Potawatomi squeeze out the orange-red juice onto a lump of maple sugar, and this

is retained in the mouth until it has melted away to cure sore throat. The Menomini, as the Meskwaki, use the root of this herb to add to medicines for greater effectiveness.

The blcodroot is well known among most Indians as a facial paint root and was used in this manner by the Forest Potawatomi, the Ojibwe and the Menomini. The fresh root of the plant was often used to paint the face of a warrior. They also used the juice to put on clan and identifcation marks for the medicine lodge ceremony.

For the women, the bloodroot furnished a valuable dye. The boiled root made a dye that the Menomini women used in coloring their mats red or orange red. The Ojibwe use this root in four or five combinations in dyeing various materials. It is not necessary to mix it with other materials to set the color and alone it gives a dark yellow or orange color. Either the fresh root or dried root may be used.

BLUE BELL **(Campanula americana)**

The Meskwaki make a tea of the leaves and use this as a remedy for coughs and tuberculosis.

BLUE COHOSH **(Caulophyllum thalictroides)**

The Menomini boil the root of this plant to obtain a tea which is drunk for the suppression of profuse menstruation. It is accounted a very valuable female remedy. The Meskwaki women used it in similar manner, but it also served as a genito-urinary remedy for Meskwaki men.

The Ojibwe use the root for female troubles, especially for cramps in the stomach during painful menses. They also boiled the fine roots to make a tea for emetic purposes.

For the Potawatomi women it furnished a tea used as an aid in childbirth.

BLUE FLAG **(Iris versicolor)**

The root of this familiar herb is used by the Meskwaki for colds and for lung trouble. When freshly macerated, the root is used as a poultice for sores and burns. Poultices of blue flag root were similarly used by the Forest Potawatomi to allay inflammation. In addition, the Forest Potawatomi weave mats and baskets with the long-bladed leaves.

While the Ojibwe use a half inch of the root boiled in water as a quick physic, it is more popular with them as a charm against snakes. In fact, the Ojibwe claim that Indians all over the country use it the same way. When the Ojibwe go out blueberrying all day, every one carries a piece of it in his clothes and will handle it every little while to activate the scent. They believe that snakes will shun them while so protected. They say that the Arizona Indians use it when they hold their snake dances and are never struck as long as their clothes are fumigated with it. They also chew it to get the odor into their mouths preparatory to taking rattlesnakes into their teeth. The rattlesnake never offers to bite them so long as the scent of the blue flag persists.

BONESET **(Eupatorium perfoliatum)**

Whereas the Menomini used this herb to brew a tea for dispelling a fever, the Meskwaki gathered it for its root which they regarded as a "sure cure" for snake bite.

BUTTER-AND-EGGS **(Linaria vulgaris)**

The whole plant is dried by the Flambeau Ojibwe and used in the kettle with other foliage and twigs as a bronchial inhalant in the sweat lodge.

BUTTERFLY WEED **(Asclepias tuberosa)**

Indians in general are known to eat the young shoots while still firm enough to snap when broken off. Fremont records that the Sioux ate the young pods, boiling them with buffalo meat.

This was one of the most important Menomini medicines. The root is pulverized and used for cuts, wounds and bruises. They also use it mixed with other roots for other remedies. Among the Meskwaki this was not known as a medicine, but as a dye. They regard it as a permanent red dye, used long ago to color basketry fibres.

CANADA WORMWOOD **(Artemisia canadensis)**

This is a very important leaf medicine of the Menomini. Combined with angelica root, it is used as a tea for stimulating suppressed menstruation. The Menomini also use the

bruised leaves of Canada wormwood with the cooked and pounded roots of angelica to make a hot poultice for reduction of local swellings.

Among the Meskwaki, the leaves of this herb are used as a poultice to cure bad burns. The Forest Potawatomi use it as a fumigator to revive a patient who is in a coma. The foliage and flowers are fumed upon a pan of live coals and often a cone is made of paper to direct the smoke into the nostrils of the patient.

CATNIP ..**(Nepeta cataria)**

Catnip, also known as catnep and catmint, is one of the three herbs used by the Menomini in the cure of pneumonia, the others being wild mint and peppermint. This compound is drunk in the form of tea, and at times is used as a poultice on the chest.

The Flambeau Ojibwe brew a tea of catnip leaves for a blood purifier. The mint water obtained by steeping the herb in lukewarm water is used to bathe a patient, to raise the body temperature. They also make a beverage tea of it.

COLUMBINE **(Aquilegia canadensis)**

The Meskwaki as well as the Ojibwe consider the root of this herb good medicine for stomach and bowl troubles. Either they simply chew it, or the root and herbage are boiled and made into a drink to cure diorrhea.

The young beaux among the Meskwaki mix the ripe seed capsules with their smoking tobacco to make it more pungent and aromatic.

COREOPSIS **(Coreopsis tripteris)**

The stems of the plant are boiled by the Meskwaki and drunk for the cure of internal pains and bleeding.

DRAGON ROOT **(Arisaema dracontium)**

Known to the Menomini as **miniuv-oset** — "owl's foot" — it is used by them in the treatment of female disorders.

EVENING PRIMROSE **(Oenothera biennis)**

The Flambeau Ojibwe use the whole plant soaked in water to make a poultice to heal bruises.

GENTIAN **(Gentiana andrewsii)**

The Meskwaki place great stress on the use of this root for snake bite. It is also an old reliable among Meskwaki nursing mothers for curing caked breasts during lactation.

The root of the yellowish gentian **(Gentiana flavida)** is collected by the Forest Potawatomi to make a tea that is alterative. By this, they mean that it acts as a remedy to change the condition of the body without causing perceptible evacuations.

GIANT HYSSOP **(Agastache anethiodora)**

The root tea of this plant is used by the Meskwaki as a diurient. For the Ojibwe it served as a remedy for coughs and for burns.

HAREBELL **(Campanula rotundiflora)**

The wiry stems of the harebell, when broken, have a bitter smell. They are used medicinally by the Meskwaki and Ojibwe. The latter use the root as their most valued diuretic.

HEPATICA **(Hepatica triloba)** — "Liverleaf"
(Hepatica acutiloba) — "Liverwort"

Both species of hepatica are of the crowfoot family of plants. The dark, evergreen glossy leaves were used extensively by the Indians as an emetic to bring about vomiting. The Forest Potawatomi use the root and leaves to make a sweetish-tasting tea to relieve vertigo.

The Menomini used the roots of this herb with those of maidenhair fern to treat various female maladies. The Meskwaki made a tea of the hepatica leaves to cure physical deformities like crosseyes or twisted mouth.

The Ojibwe used this herb as a charm to attract game animals. Frances Densmore, in "Chippewa Customs", states:

"An informant said that her father used this (hepatica), together with other roots, in the following manner: He chopped the roots and put them in the center of a small fungus which he had scooped out, the skin of the fungus forming a little bag. This he placed on or near the traps which he set for fur-bearing animals. His rise to a high position in the tribe was attributed to his knowledge of this medicine. When

he was a boy he was very poor and had only one trap. After a while he was able to buy a second trap. Then an old Mide told him about this medicine. He used it, and soon was trapping more successfully than any other man. Because of this he rose to be head chief and had credit at any trader's, for they all knew he could always get enough furs to pay for his goods."

Another non-medical use of the hepatica roots was that of the making of dye for mats and baskets by the Forest Potawatomi.

INDIAN CUP PLANT **(Silphium perfoliatum)**

The Meskwaki use the root to alleviate the nausea of pregnancy. They also hold it as a valuable reduction agent for profuse menstruation. The Ojibwe regard this plant as great medicine. They make a tea from the root for lumbago and other rheumatic pains in the back.

INDIAN SPIKENARD **(Aralia racemosa)**

It is interesting to note the varied uses of this herb among the different Wisconsin tribes.

The Forest Potawatomi pound the root into a pulp to be used as a hot poultice on inflammations. The Mascouten or Prairie Potawatomi stated that they sometimes ate the berries as a food but the Forest Potawatomi disclaimed this practice. On the other hand, the latter relished the young tips of the Indian spikenard in soups. Soup was a favorite aboriginal dish and still is among the Indians. Being expandable, it fits in well with the well-known Indian hospitality. After a meal is started several more guests may arrive and they are always welcome for added water will easily "stretch" the soup.

The Forest Potawatomi also used this herb as a fumigator. The smoke or smudge from the burning root, placed upon a pan of coals, was used to revive a patient who had sunk into a coma. It was fanned toward the nostrils and a paper cone placed over the nose to make certain that the fumes reached them.

Meskwaki mothers, when in childbirth, have is "showered" or sprayed from the mouth upon their heads to relieve the

pangs of giving birth. It is further used by the Meswaki as a seasoner for other medicines. It is said to have the properties of a stimulant, alterative and diaphoretic.

The Menomini use the root of this herb in cases of blood poisoning and as a poultice for sores; they also make a drink from the root for stomachache.

The root of the Indian spikenard is also edible. A favorite aboriginal Menomini dish was concocted with spikenard root, wild onion **(Allium cernum)**, wild gooseberry and maple sugar.

JACK-IN-THE-PULPIT **(Arisaema triphyllum)**

This plant is still called "Indian turnip" because its corms were eaten by Indians after being cooked at some length to eliminate the stinging sensation it produced in the mouth.

The Menomini pounded up the fiery root of this plant and used it in a poultice for sore eyes. They also applied the juice of the fresh corm mixed with lard as a local treatment for ringworm.

Historically, it had a lethal use. The Meskwaki used to chop this root fine and put in in the meat they fed their Siouan enemies. A few hours after eating, this would cause extreme pain and death. Its pungent active ingredient is crystalline calcium oxylate. When the Meskwaki were at war with the Sioux, they would often abandon vessels of meat cooked with this root purposely to give the enemy the impression that the attack had abruptly interrupted their eating of it. The pursuing and unsuspecting Sioux found the meat appetizing, but sometime after they had partaken of it they would suffer great stomach cramps and shortly thereafter die.

JOE-PYE WEED **(Eupatorium purpureum)**

The five-word 65-lettered Meskwaki name for this herb, translated literally, means "love medicine/ to be nibbled/ when speaking to/ women/ when they are in the wooing mood." In other words, this love medicine is kept in the mouth and nibbled when speaking to women who are — (to quote Huron H. Smith) — "in the mood for being wooed." For the Meskwaki, it had power to "fetch" them.

Its Menomini use was more prosaic, being used in diseases of the genito-urinary tract, while the Forest Potawatomi used the fresh leaves to make poultices for healing burns. They also use the flowering tops as a good luck talisman. When one is going to gamble he places the tips in his pocket and then is sure to win.

The Ojibwe make a strong solution of the root, with which to wash a papoose up until the time it is six years old. This is believed to strengthen the infant.

LOBELIA **(Lobelia cardinalis)**

This herb furnishes the Meskwaki with a purely ceremonial "tobacco" which is never smoked but used solely as an offering. To ward off a storm, some of this "tobacco" is tossed to the winds. In the Meskwaki funeral ritual. the last rite at the grave is to strew some of it over the ground.

The Meskwaki also grind up the roots of the lobelia cardinalis with those of great lobelia **(Lobelia syphylitica)** to make love medicine to use as an anti-divorce remedy. When a couple is quarreling, the ground up roots are secretly put into some common dish which is eaten by both man and wife with the result that the quarrel is soon over and they "live happily ever after."

MANDRAKE **(Podophyllum peltatum)**

Mandrake, also known as May apple, American mandrake, umbrella plant and devil's apple, has a solitary waxy white flower followed by a yellowish fruit two inches long. It is a highly regarded remedy to the Meskwaki, and is always used in mixtures, never alone. They recognize the root as a potent physic and also use it in treating rheumatism. The fresh ripe fruits of the mandrake are very acceptable to the Meskwaki. They eat them raw, or cook them to make a conserve of them.

For the Menomini, the mandrake is not a medicine but is used as a substitute for paris green. The whole plant is boiled and the resulting liquid sprinkled on the potato plants to kill potato bugs. The Menomini claim it kills the eggs of the potato bugs in the ground, as well as the bugs. The Men-

omini, like the Meskwaki, prize the fresh ripe fruits of the mandrake as a food. They were gathered and taken home to eat or preserve.

MEADOW RUE **(Thalictrum dasycarpum)**

Purple meadow rue is a hollow stemmed herb and as such is used by both the Meskwaki and the Mascouten, or Prairie Potawatomi, like a straw to drink water from a spring. It is a love medicine used to reconcile a quarrelsome married couple. The Ojibwe use its root to make a tea to reduce fever.

MILKWEED **(Asclepias syriaca)**

This plant served as an important source of food to the Indians. In the spring they ate the young shoots, cooking them like asparagus. They also ate them uncooked while the shoots were still young enough to snap when broken. They found them most succulent when dug out of sand when their tips were barely visible. They then have a crisp, nutlike flavor.

The boiled head of the milkweed was eaten by the Winnebago. It was a staple food with them and is regarded as one of their principal vegetables. Although the Ojibwe used the root as a female remedy, they used the plant chiefly for food. The Ojibwe eat the fresh flowers and tips of the roots in soups. They are usually cooked with some kind of meat and become somewhat mucilaginous like okra, when cooked. They also harvest and dry the flowers for refreshening in winter time to make into soup. The Meskwaki also gather the buds for their soups. Generally they cook them with meat, but at times add them to cornmeal mush. They also gather, dry and store them for winter use.

Frances Densmore noted that the Ojibwe chewed the root of the common milkweed along with the small root fibers of boneset **(Eupatorium perfoliatum)** and applied this to a whistle used in calling deer, while Huron H. Smith states "the Ojibwe use the milk of the common milkweed along with the milk of the Canada hawkweed to put on a deer call, believing it will better imitate the call of a fawn that is hungry or in distress."

MOUNTAIN MINT (**Pycnanthemum virginianum**)

Mountain mint grows wild throughout most of North America and the Indians were familiar with it. The Ojibwe ate the leaves for their pleasant flavor. Meskwaki uses varied. They made an infusion of it which they drank to cure chills and ague. They used it as a hunting charm, putting it on a mink trap as an alluring scent. The Meskwaki Indian also uses it to catch a snake. The snake hunter chews the tops, then spits on the end of a stick. He then places that part of the stick under the snake's mouth. It is said that the medicine renders the snake insensible to danger, and in this state, it is easily caught.

NEW ENGLAND ASTER (**Aster novae-angliae**)

We have it on authority of Frances Densmore that one of the materials smoked by the Ojibwe (Chippewa) in earliest times was the dried, powdered root of the New England aster. It was smoked by the Ojibwe hunter in a pipe to attract game. The smell of the smoke was said to be like that of a deer's hoof. It was recorded that "when the Ojibwe hunters see a deer track, they sit down and smoke this root, then go a little farther, sit down and smoke again, and so on as they follow the deer's tracks. Ofter the deer will come toward them, sniffing the air."

The Mascouten or Prairie Potawatomi name for this plant signifies "reviver." They use it as a fumigating agent to revive a patient who has sunk into a coma.

OX-EYE DAISY (**Chrysanthemum leucanthemum**)

The Menomini used this herb as a febrifuge. The herbage is pleasantly aromatic and slightly bitter. In large doses it served as an emetic.

PEPPERMINT (**Mentha piperita**)

This is one of the ingredients of the three herbs blended by the Menomini to form a cure for pneumonia. The others are wild mint (**Mentha arvensis canadensis**) and catnip (**Nepeta cataria**). This potent compound is used as a poultice on the chest. They also make this into a tea.

PLANTAIN (**Plantago major**)

Captain Jonathan Carver traveled among the Forest Potawatomi in 1796 and noted their usage of many herbs for medicine. Perhaps his most curious reference to the efficacy of any of these plants is in connection with rattlesnake plantain. Carver notes that the Indians used the leaves for the bite of reptiles, chewing it and applying it to the wound, at the same time swallowing some of the juice. (For identical use, see blue flag.)

Densmore records a similar use by the Ojibwe who mixed the powdered plantain root with vermilion and carried it on their person as a protective charm against not only the bite of snakes but ward off their very appearance. The Ojibwe further used the broad leaves as a remedy for external inflammation. The soaked the sinewy leaves in warm water, then bound them on sores, bruises or sprains as a poultice. It also served the Ojibwe as a soothing remedy for burns, scalds and bee stings.

The Forest Potawatomi prize the root and leaves of this plant very highly because it is valuable to them not only in the treatment of female disorders, but they also find it a specific for stomach and bladder diseases.

ROSEMARY (**Andromeda glaucophylla**)

Young, tender leaves and tips of this herb are boiled by the Flambeau Ojibwe for a beverage tea. While they often pick and use it fresh on the hunting trail, they also harvest and dry it for future use. They find it a satisfactory substitute for "store tea."

ST. JOHN'S WORT (**Hypericum ascyron**)

This is a very important pulmonary remedy with the Menomini. The root tea is used for weak lungs, and if taken in the first stages of tuberculosis, it is thought by the Menomini to be a specific.

The Meskwaki dry the root, deriving from it a dusting powder which when placed upon the bite of a water mocassin will draw the poison and heal it.

The Forest Potawatomi claim that the marsh St. John's

wort (**Hypericum virginicum**) contains three kinds of medicine. In one of these the leaves are used to make a tea to reduce fevers.

SHEPHERD'S PURSE (**Capsella bursa-pastoris**)

This herb has favor with the Menomini as a cure for poison ivy. The plant is steeped, and the water when tepid is used as a wash. At times they simply apply the freshly bruised herbage.

SNAKEROOT

BLACK SNAKEROOT (**Sanicula marilandica**)

DOTTED-BUTTON SNAKEROOT (**Cimicifuga racemosa**)

SENECA SNAKEROOT (**Polygala senega**)

WHITE SNAKEROOT (**Eupatorium urticaefolium**)

Black snakeroot has been a noted aboriginal remedy along the Menomini, possessing rather active aromatic, bitter principles.

The turnip-like root of the dotted-button snakeroot is accredited with all sorts of virtue by the Meskwaki and the Potawatomi. The infused root is used as a remedy for blood in the urine. It is also a valuable cure for bladder trouble. Applied locally, the liquid is a cure for the itch. In hot weather, in olden times, this plant was fed to ponies to make them spirited so that they would be eager to hunt the buffalo.

The Ojibwe relied upon the root of the Seneca snakeroot to insure their safey on a journey. In addition it was supposed to improve the general health of a person who carried it constantly. It was believed to have value as a tonic. A typical bag for a small quantity was cut from a piece of buckskin, the strip with which the bag was tied being part of the bag itself. The medicine was placed in the middle, the edges gathered up, and the strip wrapped around and tied.

Both the Meskwaki and the Mascouten or Prairie Potawatomi tribes used white snakeroot as a steaming agent in the sweat bath.

SOLOMON'S SEAL (**Polygonatum biflorum**)

The Ojibwe use the root as a physic. They also cook the root to yield a tea used to treat coughs.

SPIDERWORT (**Tradescentia occidentalis**)

The root tea of the western spiderwort is used by the Meskwaki as a diuretic.

SPREADING DOGBANE (**Apocynum androsaemifolium**)

Among the Ojibwe, the root of this herb was chewed by a man at a ceremonial dance if, as Densmore notes, "he feared that some one might use a bad medicine against him." Dancers were said to use "charm medicines," rubbed on their limbs, which enabled them to dance without weariness but produced the opposite effect on those who danced behind them or "crossed their footprints."

Spreading dogbane is also one of the sacred roots that is eaten during the Ojibwe medicine lodge ceremony. The stalk and root of this herb are steeped to make a tea for Ojibwe women to drink to keep their kidneys free during pregnancy. They use it also for throat trouble. When one has a coated tongue and is afflicted with headache, the root is placed upon live coals and the incense is inhaled.

The Forest Potawatomi use the root of the dogbane as a diuretic and urinary medicine, while the Mascouten or Prairie Potawatomi use the green fruits, which they boil to extract the active ingredient for a heart and kidney medicine.

The Flambeau Ojibwe women have yet another, and purely mundane, use for this herb, using the outer rind for fine sewing. In the fall, when mature, this makes one of the strongest native fibers, stronger even than cultivated hemp, to which it is related. Spreading dogbane was also resorted to by both the Forest and the Prairie Potawatomi as a source of a thread for sewing on the fine beadwork that is put upon buckskin, such as moccasin and coat work. Just about the time the pods are green, and before they open, the rind or bast fiber of the bark is very strong and tough. By twisting the stalk in opposite directions and pulling upon it they can determine just when the bast fiber has matured to suit their purposes. Then they cut down the entire stalk and remove the bark, which is

bound into braids for future use. It is usually then thrown into a kettle of hot water, which renders it more readily separable and further toughens it. The fine divisions of this fiber are very strong and also quite slender. A strand no thicker than No. 200 D. M. C. cotton will be many times stronger. Hence its use for beadwork.

SWEET CICELY

SMOOTH SWEET CICELY (**Osmorrhiza claytoni**)

WOOLY SWEET CICELY (**Osmorrhiza longistylis**)

The Meskwaki and the Forest Potawatomi used the smooth sweet cicely as an eye remedy, using its roots to make an eye lotion. The latter also used the roots to steep a tea for use as a stomachic. This tea was likewise used for making parturition easier. They used the liquorice-flavored tea of the herbage for sore throat.

This species also served the Forest Potawatomi and the Meskwaki as a horse medicine. They chopped the root of this herb into fine bits and added it to oats or other seeds which they gave to their ponies to make them fat and sleek. The root was grated and mixed with salt for distemper.

Wooly sweet cicely was not so much a food as a medicine. For one who was losing flesh, this was a fattener. It has the taste of carrot and must be eaten cautiously, eating one branch or piece of the root at a time.

SWEET COLTSFOOT (**Petasites palmatus**)

The Menomini boil the roots of this herb to provide a liquid which cures the itch.

SWEET FLAG (**Acorus calamus**)

Of popular esteem among many Indian tribes is the root of the sweet flag. This herb is denizen of swamps and stream borders, usually growing directly in the water. Its erect, swordlike leaves are pleasantly aromatic, and this fragrance serves to distinguish it from the similar-looking blue flag (**Iris versicolor**).

The whole plant provided medicine for the Indians, who also made a concoction from the root to put in fish nets, while

hunters made garlands of the leaves to hang around their necks for the pleasant odor and also for the supposed mystic powers. In fact, it was so valuable that it served as a medium of exchange between several tribes.

Among the Ojibwe, the roots of this herb, together with those of wild sarsaparilla (**Aralia nudicaulis**) were dried, grated very fine, and a decoction made of the two. This was sprinkled on fish nets and allowed to dry before the nets were put into the water as a medicine to attract fish. The amount of powdered roots needed for one application was less than half a teaspoonful, according to Densmore. This herb also had a medicinal use for the Ojibwe who considered it a remedy for "humor of the blood," which, perhaps, was an aboriginal forerunner of "tired blood."

The Menomini use the root of this plant to cure stomach cramps. It is considered a very powerful remedy and is used only in very minute quantities. The measure of a dose is the length of a finger joint. They deem it a good physic for the whole system, clearing the bile. The root is chewed as a stimulant to digestion and to relieve dyspepsia. The rootstock is dug in the autumn or spring, washed and then dried for subsequent use. The unpeeled root is more potent than the peeled.

Sweet flag is a valued medicine to the Forest Potawatomi and used for various ailments. The dried root is powdered and snuffed up the nose to cure catarrh. It is also one of the ingredients of a remedy to stop hemorrhage (hemostatic). This is one of the bitterest of medicines known to the Forest Potawatomi and is described by them as being "bitter as gall." Many of the Indians in speaking of this remedy are inclined to be cautious in the amount used and say that only a very small piece of the root is necessary.

Moth Meskwaki and Ojibwe use the root of sweet flag as a quick acting physic. In combination with other herbs it serves them as a cure for scalds and burns. The root is boiled and made into a drink for stomach cramp.

Radin mentions Sweet Flag as an active ingredient in a medicine used by the Winnebago for female trouble. "If a

woman has trouble with her womb, this medicine will cure her immediately. She must not, however, drink it, but inject it. The ground up ingredients, thoroughly mixed with water, is put into a bladder and injected vaginally by means of a wing bone." For a detailed description of this ingenious aboriginal syringe see our Introduction.

TANSY (**Tanacetum vulgare**)

The yellow flowers of this herb are used by the Flambeau Ojibwe as an addition to their odorous hunting mixture which they smoke to attract deer.

TRAILING ARBUTUS (**Epigaea repens**)

Known as mayflower, ground laurel, winter pink and gravel plant, this herb has astringent and tonic qualities. Decoctions made from it with **Hepatica acutiloba** and **Asarum canadense** (wild ginger) boiled in thick maple syrup, were given as an emetic when abdominal pains were present.

TRILLIUM

WAKE ROBIN (**Trillium erectum**)

LARGE-FLOWERED TRILLIUM (**Trillium grandiflorum**)

Not nearly as pretty as the large-flowered Trillium, one of the loveliest of wild-flowers, is wake robin, also known as bethroot, birthroot and stinking Benjamin; This last because it has a fishy smell like whale oil. Indians used the short, thick rootstocks to steep a tea for easing difficult childbirths, and as an astringent for various disorders.

The Menomini use the root of the large-flowered trillium to reduce eye swellings. The root is grated and applied as a poultice to the affected eye. For stomach cramps it is grated, steeped and drunk as a tea. Menomini women use this herb for irregularity of menses; they simmer the grated root in water, then drink the potent liquid as a regulant.

The aboriginal Forest Potawatomi name for this herb signifies "Indian turnip." Nursing mothers use an infusion of the root for treating sore nipples during lactation. The raw root, when pounded into a poultice, is a treatment for tumors, ulcers, and insect stings.

VALERIAN (**Valeriana edulis**)

The Menomini regard valerian root as fine for cuts and wounds. It is ground to a pulp in a mortar, then placed on a cut to stop pain and bleeding. Due to its property of drawing out inflammation, this herb is much used in poulticing boils. This tribe also uses valerian as a tapeworm medicine. after which it derives its Menomini name.

The Meskwaki use valerian root as a hemostatic to arrest hemorrhage.

VERVAIN

BLUE VERVAIN (**Verbena hastata**)

WHITE VERVAIN (**Verbena urticaefolia**)

The Menomini use a root tea of blue vervain to clear up albuminous urine. In larger doses it served them as an emetic.

The white vervain was not used by the Menomini, but there are records of its aboriginal use by other tribes as an antidote to poison ivy. And the Meskwaki used the root tea of the white vervain as a hemostatic in profuse menses.

VIOLETS (**Violaceae**)

AMERICAN DOG VIOLET (**Viola conspersa**)

DOWNY YELLOW VIOLET (**Viola pubescens**)

None of the violets are considered medicinal by the Menomini, though they have been used in the past by some tribes of Indians. They used the acrid roots as a blood purifier and as a remedy in chronic affections of the lungs and cutaneous diseases.

The Flambeau Ojibwe use the whole plant of the American dog violet to make a tea for heart trouble. Similarly, the Forest Potawatomi treat various heart diseases with a medicine made from the root of the downy yellow violet.

WHITE MUGWORT (**Artemisia gnaphalodes**)

The dried flowers of this herb were used to counteract the effect of "bad medicine" placed in a person's path. In using it, the person took the coals of hard wood, put the dried flowers on the coals and stood over the fumes therefrom in such a manner that his limbs and feet were saturated. It was said that "his legs would swell up if this were not done."

It is interesting to note that a fumigation of the head and hands with this herb was performed by those who had cleansed the dead. The herb was also burned in the medicine lodge during prevalence of a contagious disease.

WHITE SAGE (**Artemisa ludoviciana**)

The Ojibwe used this herb as a horse medicine. The Sioux were known to smoke it.

WILD ASTER (**Aster puniceus**)

This plant was a hunting charm to the Ojibwe. The fine tendrils of this root as found in the autumn were smoked in a pipe with tobacco to attract game.

WILD BERGAMOT (**Monarda fistulosa**)

Strangely enough, the Forest Potawatomi have no name or use for this plant, according to Huron Smith, who found this rather surprising because the neighboring tribes all make use of it. It is a universal remedy of the Menomini for the treatment of catarrh. The leaves and inflorescence are the parts of the herb employed to form a tea. It is used by the Meskwaki for the treatment of colds, and by the Ojibwe for bronchial and catarrhal affections. The Flambeau Ojibwe gather and dry the whole plant, boiling it in a vessel to obtain the inherent volatile oil to inhale.

Our early American colonists learned the use of the bergamots from the Indians. The Creek Indians made an infusion of various monardas to give, both as a drink and as a bath, to patients suffering from dropsy. The Choctaws used wild bergamot as a cathartic and also for colds.

To this day the red bergamot (**Monarda didyma**) is still called "Oswego tea," the common name given to the herb because it was much used by the Oswego tribe in preparing an herb tea. This tribe and numerous others are still fond of red bergamot tea and drink it regularly in place of oriental teas. At one time in early colonial history, when there was a boycott on British imports, Red Bergamot tea was the only tea the American colonists would drink. The leaves were stripped from the stems just before the plant blossomed, then they were dried and stored for future use. Red bergamot

also goes by the common names of bee balm, fragrant balm, red balm and Indian's plume.

WILD GARLIC (**Allium canadense**)

While the flavor of this plant is very strong, the Indians use it in soup, and have always accounted it a valuable wild food. Sturtevant records that in 1674, when Pere Marquette and his party journeyed from Green Bay to the present site of Chicago, wild garlic formed almost the entire source of their sustenance.

Wild garlic is the small wild onion of the prairie. It is the favorite wild food of our Algonkian Indians and its tiny size is their only regret. The Meskwaki gather and dry it for winter cookery, and seasoning. They most frequently used it to cook with venison.

WILD GERANIUM (**Geranium maculatum**)

This root is accounted a great medicine by the Meskwaki generally and has varied uses among them. The infusion is used to cure sore gums and pyorrhea, and to stop teeth from aching. It is also a treatment for neuralgia. A poultice of the pounded root is used as an astringent agent to shrink protruding hemorrhoids. The Ojibwe also use the astringent root orally for healing a sore mouth. It is also an Ojibwe specific for treatment of flux.

WILD GINGER (**Asarum canadense**)

This herb is also known as Canada snakeroot. The Menomini name for it was **nami'pin,** meaning "beaver potato." The fresh or dried root is used by the Menomini as a mild stomachic. When a patient is anemic or has a weak stomach, and it might be fatal to eat something he craves, he must eat a part of this root. Whatever he wants may then be eaten with impunity.

The root of wild ginger is kept on hand at all times by the Meskwaki and it might be called their most important native seasoning. It was used for a sore throat, and in a mixture with other herbs for lung trouble. Decoctions made from it with **Hepatica acutiloba** and **Epigaea repens** (trailing ar-

butus), boiled in thick maple syrup, were once given as an emetic when abdominal pains were present.

The Meskwaki give a fine reputation to this root, and use it for many things. The cooked root is put into the ear for sores in the ears or earache. When one cannot eat certain things, this root is cooked with them and renders them palatable. When spoiled meat is cooked with it, no ptomaine poisoning results. Mud catfish are cooked with it to improve their flavor. It is also used by the Meskwaki as a fishing "charm": then the root is chewed and the fisherman uses the spittle on his bait, it enables him to catch more catfish.

The Forest Potawatomi use wild ginger principally to flavor meat or fish and render them more edible. It also serves them as a mild stomachic.

The Ojibwe often use this root in cookery to season their food. They claim it takes away any muddy taste from fish. and will render any meat dish digestible by anyone, even if they are ill. The roots are processed in lye water for cookery on a large scale.

WILD LEEK (**Allium tricoccum**)

This is the larger wild onion and is known to the Ojibwe as "Winabojo's Onion," — the one he pointed out to their ancestors for food. It is gathered by them in the spring when it is rounder and plumper than in the fall. It is also gathered and dried for future use. The wild leek is somewhat bitter, while the smaller wild onion is sweet.

The forest Potawatomi use this larger wild onion as food. It becomes an excellent article of food after its acrid quality is removed by heating over an oven with a thick layer of grass or drying in the sun.

WILD LETTUCE (**Lactuca canodensis**)

It was used by the Menomini to cure poison ivy, the milky juice of the fresh plant being rubbed on the eruptions.

WILD MINT (**Mentha arvensis var. canadensis**)

This is one of the three herbs generally taken together by the Menomini to form a cure for pneumonia. The others used with it are peppermint and catnip. The compound is drunk

in the form of a tea and is also used as a poultice on the chest.

The Potawatomi use the leaves or the top of this herb for treating fevers and also for a stimulating tea for the cure of pleurisy.

Among the Flambeau Ojibwe, a tea is brewed from the entire plant, to be taken as a blood remedy. It is also used by them in a sweat bath. The foliage of wild mint is also used to steep a beverage tea.

WILD ONION (**Allium cernuum**)

In the spring when it is sweetest, the wild onion is a favorite article of food with the Ojibwe, especially for flavoring soups.

WILD PARSNIP (**Pastinaca sativa**)

The root of this herb is used by the Forest Potawatomi to make a poultice for inflammation and sores.

WILD PEA (**Lathyrus venosus**)

This is one of the most highly valued herbs of the Ojibwe, according to Densmore. In addition to its power as a charm to insure safety and success, it is said to be a powerful curative agent, being used as a remedy for convulsions. The roots were used as a dressing for wounds.

A piece of the dried root carried on the person was believed to effect a happy outcome of any difficulty. Further, the dried root in considerable quantities, rolled in birch bark, was carried as a general protection by warriors and hunters.

WILD SARSAPARILLA (**Aralia nudicaulis**)

Among the Menomini, the roots of this herb, together with those of sweet flag, were dried, grated very fine, and made into a decoction. This was sprinkled on fish nets and allowed to dry before the nets were put into the water as a medicine to attract fish.

The Ojibwe recognize the root of this herb as a strong medicine, but do not steep it to make a tea. The fresh root is pounded and applied as a poultice to bring a boil to a head or to cure a carbuncle. It was also a special squaw remedy for blood purification during pregnancy. The root was pounded in a mortar, then boiled in water.

The Meskwaki pound the root of wild sarsaparilla to make a poultice to cure burns and sores. The Forest Potawatomi use it similarly, pounding the root into a mass to be used as a poultice to reduce swellings and cure infections. It is a valued root and is said to have the same properties and uses as Indian spikenard, namely, stimulant, diaphoretic and alterative.

WINTERGREEN (**Gautheria procumbens**)

Carver found the Potawatomi eating the berries of this herb, esteeming them as balsamic and invigorating to the stomach. They make a tea from the leaves as a febrifuge, and as a cure for lumbago and rheumatism.

The Flambeau Ojibwe use the wintergreen leaves to brew a tea for rheumatism. They also make a leaf tea from the youngest, tenderest leaves for a beverage tea, and especially favor it because it gives a feeling of well-being.

The white man discovered the properties of this plant from the Indians, and originally it was the chief source of methyl salicylate, an active ingredient in aspirin, which is now derived from coal tar.

WOOD BETONY (**Pedicularis canadensis**)

The Menomini have two quite divergent uses for this herb. In one instance, the root is chopped up fine to put into oats that are fed to the pony "to make him fat and vicious to all but his owner." From this use it derives its Menomini name of "horse medicine." On the other hand, the root of wild betony is carried on the person of the Menomini male who is contemplating making love advances.

The Meskwaki know this also as a love medicine. But with them it is not the ordinary love charm; rather, the root is used to make estranged married people congenial again. Like Lobelia root, it is placed in some dish that they are going to eat in common, with the result that they love each other again.

The use of the root of this herb differs with the Prairie and the Forest Potawatomi tribes. The former use it for reducing both internal and external swellings, whereas the latter use

it as a physic. Mixed with oats, the roots of wild betony are used by the Forest Potawatomi to fatten their ponies.

According to Huron H. Smith's Ojibwe informant, the root of wood betony was a "bad medicine" to his tribe when secretly resorted to as an aphrodisiac. It was cut fine and placed in some dish of food without the knowledge of those who were going to eat it, to arouse their passions. It is of credit to the Ojibwe that most of the tribe decried such "bad" usage.

WOOD LILY (**Lillium philadelphicum**)

This is one of the valued Meskwaki potatoes, which is becoming quite scarce. The straight roots are a favored Meskwaki substitute for potatoes. The bulbs of this native herb are brilliant scarlet.

WOOD SORREL (**Oxalis acetosella**)

This herb is gathered by the Forest Potawatomi, cooked and sugared to make a dessert which they relish.

YARROW (**Achillea millefoium**)

Yarrow or Milfoil, a perennial herb, with flat-topped clusters of white-rayed flower heads, and finely dissected leaves, is common throughout the United States and much of Canada. The aboriginies dried its herbage and made an infusion of it to administer as a mildly stimulating bitter tonic for a disordered digestion or a run down condition.

The Forest Potawatomi place the flower heads upon a plate of live coals to create a smudge which is used for two purposes. First, it is to keep any evil spirits away from the patient, and second, it is to give the proper scent to revive the patient who may be in a state of coma. The medicine man will sing while he fumigates the patient in a way to suggest that the patient will recover, making use of the power of suggestion.

This herb, characteristically named **onawoni'koso,** or "squirrel tail," by the Menomini, is used by them in the treatment of fevers, a hot tea being steeped from its leaves. The Menomini also use the fresh tops to rub onto eczematous sores

for cure. The leaves were used as a poultice for the rash of children.

"Flying squirrel's tail" is the descriptive name given to yarrow by the Meskwaki, who use the leaves and flowers to make a tea for fever and ague.

The Ojibwe use the florets of yarrow in the ceremonial smoking. They also place them on a bed of coals, inhaling them to break a fever. The Ojibwe also used the leaves of the wooly yarrow — **Achillea lanulosa** — as a poultice to cure a spider bite. The dried flowering heads are smoked in mixture with other herbs, much as kinnikinnik, not for pleasure, but more for ceremonial purposes.

YELLOW LADIES' SLIPPER (**Cypripedium parviflorum**)

This herb has been found in the sacred medicine bundles of the Memomini where its purpose is to induce dreams of the supernatural. It is said to be used by the Menomini women in female disorders. It has similar repute among the Ojibwe, the root of this species being deemed a good remedy for many female ailments.

YELLOW PIMPERNEL (**Taenidia integerrima**)

The Flambeau Ojibwe declare that the dried seeds of this herb are very good for smoking in a pipe when one goes hunting for they will bring luck.

GLOSSARY OF TERMS

Astringent — contracts tissues.

Cathartic —a purge or physic.

Concoction — to combine ingredients in cooking.

Decoct —to boil (a medicinal substance) in water to extract its essence or principles.

Decoction — an extract obtained by decocting.

Diaphoretic — to produce perspiration.

Diuretic — to promote urination.

Emetic — to induce vomiting.

Febrifuge — to reduce or dispel fever.

Fumigator — disinfectant by fuming.

Hemostatic — arrests hemorrhage.

Inflorescence — a flower cluster.

Infusion — a liquid extract obtained from a substance by steeping or soaking it in water.

Lactation — the nursing period.

Macerate — to soften or separate the parts of a substance by steeping in a liquid with or without heat.

Parturition — childbirth.

Poultice — soft mass (of herbs) applied as a medicament to the body.

Stomachic — beneficial to the stomach; a stimulant to digestion.

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A FLUTED POINT FROM JEFFERSON COUNTY

Robert J. Salzer and Mark Stock

During the summer of 1960, a fluted projectile point was collected from the surface of a low sandy terrace adjacent to the Rock River, northeast of the city limits of Fort Atkinson, Jefferson County, Wisconsin. It is made of a fine-grained dark grey chert-like material, with inclusions of larger crystalline impurities. Grinding is found along the edges, extending from the "ear-like" projections to a point approximately one-third of the length from the base. Aside from the single "flute" or channel flake removed from each side, the flaking technique can be inferred from the presence of small, relatively narrow flake scars along the edges.

The point is of singular interest due to its remarkable resemblance to the classic Folsom point, found on the Great Plains in western United States and associated there with extinct forms of Pleistocene fauna. On the Plains, these Folsom points have been dated at 9,000 to 10,000 years ago. (Wormington, 1957) Although a number of fluted points have been found in Wisconsin, (Jones, 1948; Ritzenthaler and Scholz. 1951; Kuhm, 1934; Sugden, 1954; Nero, 1955; Byers, 1942) in the author's opinion, none of these points share the degree of similarity to the western form evidenced by this Jefferson County find.

While the term "Folsom Point" has been readily applied to this specimen by observers, it should be pointed out that this type-name, "Folsom", refers not only to the morphological characteristics of the projectile point, but to the associated artifacts and to the extinct fauna mentioned above as well as geographical and temporal distribution defined in the Great Plains.

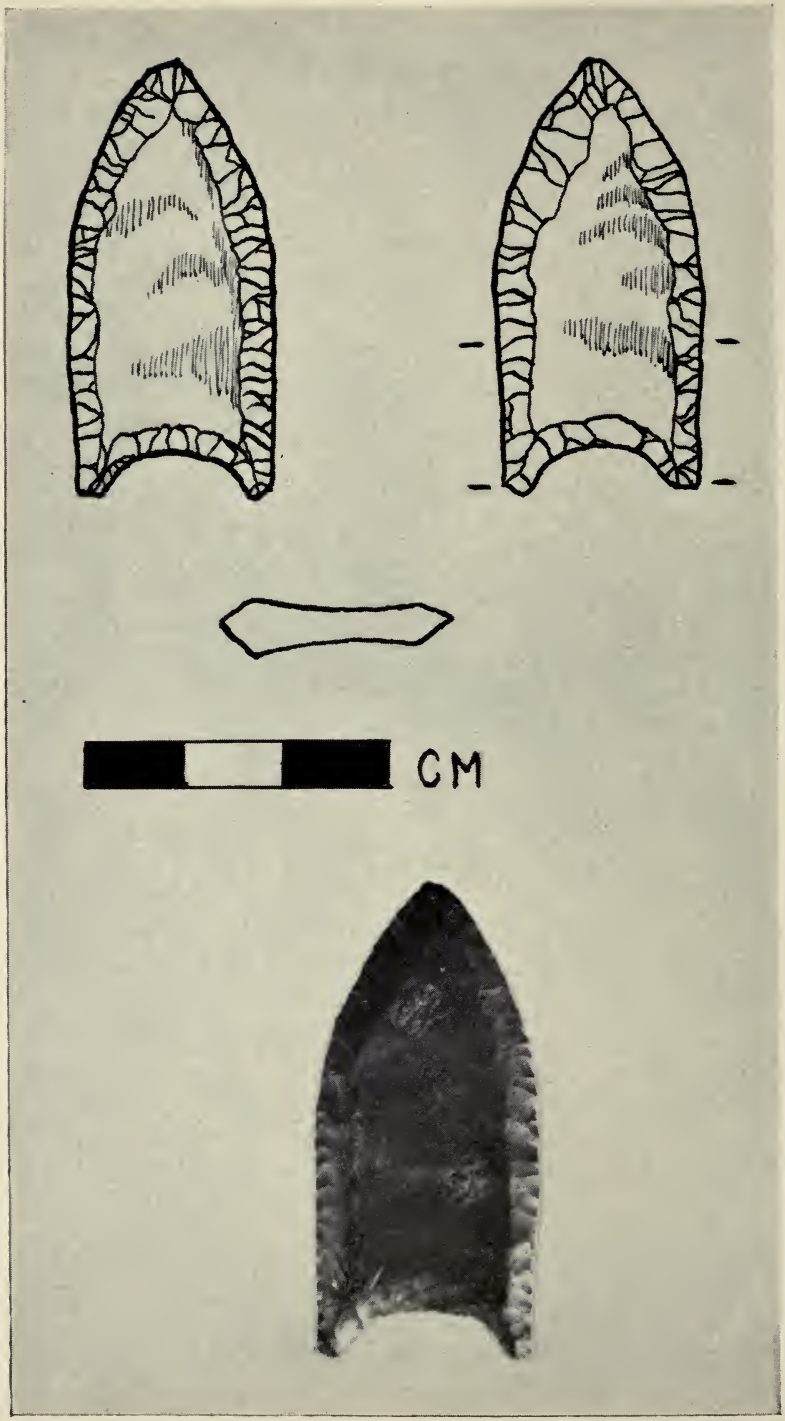
Employing morphological criteria solely, the Jefferson County point is extremely similar to the classic type, but without similar associations, the type-name "Folsom" obviously cannot be applied.

MEASUREMENTS:

Length

apex of base to tip of point: 38 mm.

apex of base to end of channel flakes: 32 mm. and


CM

33 mm.
maximum length: 42 mm.

Width

width at base: 19 mm.
width of channel flakes: 15.5 mm. and 15 mm.
maximum width: 20 mm.

Thickness

thickness along mid-line: 4 mm.
maximum thickness: 5 mm.

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Minutes of the Thirteenth Annual Meeting of the Wisconsin Archeological Survey

Milwaukee, June 3, 1961

The meeting was called to order by President Borhegyi at 10:30 at the Milwaukee Public Museum. Present were: Joan Freeman, Parsons, Hummel, Clyde Smith, Wiegand, Dunn, Koenings, Ritzenthaler, Mr. and Mrs. Ronald Mason and Rowe.

The minutes and treasurer's report were approved. Two new members were elected: Dr. Joan Freeman and Donald Brockington.

Miss Freeman reported on the Highway Salvage program for the summer of 1960 which, she stated, was under the direction of Donald Brockington. Our crew covered 122 miles and located 5 sites. A second crew excavated 3 sites (2 Hopewellian and 1 Effigy Md.) on the right-of-way of the relocation of Highway 60.

A survey crew will continue to try and locate sites during the summer of 1961 and Brockington & Freeman will excavate in Richland County at the same time.

Parsons reported that a flexed burial had been excavated in a linear mound at Lizard Mound State Park and that this has been displayed at the site. There followed a discussion of the moisture problem in the exhibit and Mr. Wiegand offered assistance with this matter. Mr. Koenings indicated that the condemnation proceedings on land at Lizard Mound were tied up, and the secretary was instructed to write to the assistant attorney general requesting a speed-up on this.

Clyde Smith reported that no restoration was carried on at Aztalan last year, and it was agreed that stakes will be placed in the proper location in the stockade line by Miss Freeman, State Historical Society Museum, in the Fall. Mr. Koenings reported that prison labor would be available for restoration work and that additional funds would be available also. It is hoped that the land across the river from the Aztalan village would be purchased. Ritzenthaler and Wiegand agreed to undertake an experiment with plastering a portion of the

stockade with local clays. They will put on a trial patch to test its practicality.

The possibility of an additional copy of the Aztalan film (with magnetic strip sound track) was discussed and the Milwaukee Public Museum agreed to provide part of the cost.

Thus followed a discussion of the need for better signs directing people to the Aztalan Park.

The possibility of producing a movie on the archaeological features in the State of Wisconsin was discussed and a committee was appointed consisting of:

Roman Koenings — Chairman

Walter Dunn, Jr. — State Historical Society Museum.

Robert Ritzenthaler — Milwaukee Public Museum

Mr. Koenings reported that the land on which the Oconto Old Copper Site is located now belongs to the Wisconsin Conservation Department, and the United States National Park Service is willing to give it historical site status. As a result of discussion of the kind of exhibit ought to be there, it was recommended that the U. S. National Park Service be asked to provide consultant aid. The need for a State Archaeologist for Wisconsin was considered.

Ritzenthaler reported that the Milwaukee Public Museum was the clearing house for site locations in the state and that sites were being codified on cards (Fig. 1). He moved that $200 of Survey funds be allocated for site codification. Seconded and passed. All institutions and individuals are urged to report sites to Robert Ritzenthaler at Milwaukee Public Museum.

President Borhegyi reminded the membership that the survey is interested not only in archaeology but also in ethnohistorical research.

The meeting adjourned at 12:15.

Respectfully submitted,

Chandler W. Rowe, Secretary.

TYPE OF SITE:

Mounds ☒ Village ☐ Campsite ☐ Garden Beds ☐

Petroglyphs ☐ Worksite ☐ Cemetery ☒ Cache ☐

Quarry ☐ Cave or Rockshelter ☐ Other:

AD- 1
CODE NUMBER

Name of site	County	Township and range	Location in section	Present owner
Frank McConick Group	Adams	Adams Sect. 3 T17N, R6E		
Reported by: H.E. Cole H.A. Smythe — Date 1919				

Geographical Location: 2 miles east of Friendship on bank of a small stream

DESCRIPTION OF SITE:

Frank Mc Conick Mound Group consisting of three(3) effigy and Two (2) liniar mounds.

CULTURE:

REFERENCES:

Wisconsin Archeologist	Series	Vol.	No.	Page
Chas. E Brown		18	2	71
	E.S.	4	1	12

SPECIMENS FROM SITE IN POSSESSION OF:

REMARKS:

WISCONSIN ARCHEOLOGICAL CODIFICATION FILE

Figure 1

RADIO CARBON DATES FOR AZTALAN

Robert Ritzenthaler

Another radio carbon date for Aztalan has been released by the University of Michigan Memorial Phoenix Project Laboratory under the direction of Prof. H. R. Crane. The charcoal sample was from a pit in a house site: M-1037 with a date of 1200 years ago plus or minus 150 years.

Our other date for Aztalan obtained last year was from a sample occurring in the top level of the charcoal charnal house in the northwest pyramidal mound. The date was 320 years ago plus or minus 200 years.

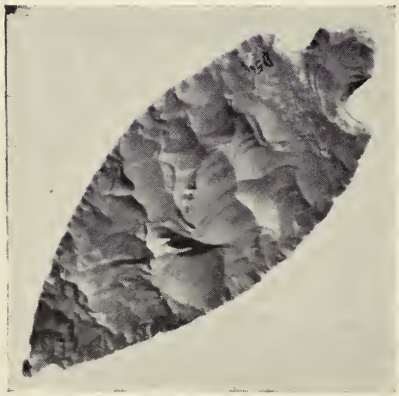
Thus, one places occupation of Aztalan at 760 A. D., the other at 1640 A. D. Neither of these dates are satisfactory to me. One is too early, the other too late in my opinion. If we take the midway point between these two dates we arrive at 1200 A. D. which I am inclined to believe is a more logical time at which to place the occupation.

While one cannot throw these two dates out of the window, I shall continue to view them with open-minded suspicion awaiting further radio carbon runs on the Aztalan material.

Interesting Wisconsin Specimens

OLD COPPER KNIFE

With two rows of punch marks on one side and one row on the other. Length 4 inches. Lawrence College Collection.



TURKEY TAIL BLADE

With point end curiously reworked. Red Ochre Culture. Length 5 inches. Lawrence College Collection.

WE ARE HAPPY to welcome as new members of the Society the following:

Robert J. Couvillion, Hale Road, Peshtigo, Wis.

Mrs. Orville Bondele, R. 1, Gratiot, Wis.

Darrell Beland, 522 - 4th Ave., Menominee, Mich.

Charles T. Goern, Jr., 1093 Jenning Ave., Salem, Ohio.

Roger H. Derusha, 1820 15th Ave., Menominee, Mich.

Milton H. Schmidt, 1805 - 14th Ave., Menominee, Mich.

John A. Hanson, R. 1, Box 176, Grantsburg, Wis.

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PROGRAM: Dr. Robert Ritzenthaler, Chairman. Dr. E. G. Bruder, Herman Zander.

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(Meets second Tuesday, 7:45 P. M., State Historical Society, October thru May)

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WISCONSIN
ARCHEOLOGICAL SOCIETY

DECEMBER, 1961 Vol. 42, No. 4 (New Series)

THE WISCONSIN ARCHEOLOGIST

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THE AGE OF THE OLD COPPER CULTURE — 143
Carol Irwin Mason and Ronald J. Mason

MORE TRUNCATED-BARB POINTS FROM WISCONSIN — 155
Robert Ritzenthaler

THE HASTINGS CAMPSITE — 157
Phil Sander

PICTOGRAPHS IN THE LAKEHEAD REGION — 165
Dr. Herbert W. Kuhn

THE PIPE SITE, Paul Koeppler — 174

INTERESTING WISCONSIN SPECIMENS — 178

THE COLLECTOR'S CORNER — 179

INDEX ADDENDA — 182

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Milwaukee, Wisconsin

Incorporated, 1906

For the purpose of advancing the study and preservation of Wisconsin Indian Antiquities.

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MILWAUKEE, WISCONSIN, DECEMBER, 1961

THE AGE OF THE OLD COPPER CULTURE

Carol Irwin Mason and Ronald J. Mason

There are several lines of evidence bearing on the age of the Old Copper culture — typological, geological, and those derived from radiocarbon dating. By far the most influential to date have been a pair of radiocarbon dates from a site on the outskirts of Oconto, Wisconsin (Ritzenthaler and Wittry 1952; Wittry and Ritzenthaler 1957). These dates (C-836: 5600 + — 400 B. P.; C-837, C-839: 7510 + — 340 B. P.) have been used as evidence, almost to the exclusion of any other kind of data, to demonstrate the antiquity of Old Copper and to place what is essentially a typologically Late Archaic assemblage in what we regard as an uncomfortable and unlikely temporal position. More recently, other evidence based on the Old Copper stone typology has been cited as possibly linking Old Copper with other early Wisconsin assemblages (Wittry 1959a; 1959b) and thereby providing what can be interpreted as additional support to the early Oconto dates. In this paper, we will re-examine both the radiocarbon dates from Oconto and Old Copper stone artifacts in order to assess their value as evidence in attacking the complex problem of the age of the Old Copper culture.

The acceptance of the two radiocarbon dates from the Oconto site at face value is embarrassed by several considerations. First, they fail to agree with each other by almost 2000 years. Second, they are wholly at variance with the other radiocarbon dates interpreted as dating Old Copper at the Osceola site, the Reigh site, Riverside Cemetery, and Isle Royal; all of these dates cluster between 3000 and 3800 years ago (M-643, M-644, M-658, M-320, and M-371E). Third, they are out of line with the dates of other typologically Late Archaic components in Eastern North America. Finally, the Oconto dates cannot be satisfactorily reconciled with the

radiocarbon dated post-glacial lake stages as recorded in the Lake Michigan basin.

The distributional study of Old Copper artifacts in Wisconsin made by Wittry (1957 — see especially Fig. 4) immediately supplies data of chronological import when viewed against the background of post-glacial geology. Wittry's distributional maps show the occurrence of large numbers of Old Copper artifacts in areas (particularly in Manitowoc, Kewaunee, Door, Brown, Oconto, and Marinette counties) that were under water during the Algonquin and Nipissing stages in the Lake Michigan basin. A few of the pertinent localities may even have been just under the waters of the Algoma stage; quantitatively, these latter loci are unimportant enough so as not to detain us further here. Using the same techniques as those employed by Mason (1958) and Quimby (1958 and 1959) to determine the age of Paleo-Indian artifacts in the Great Lakes region, the distributional pattern presented by Wittry would suffice to indicate that the Old Copper culture as represented by many of the finds along the present shores of Lake Michigan and Green Bay must be not only post-Algonquin, but post-Nipissing in age. This means that the artifacts in question and the culture they represent should not date before about 3500 to 4000 years ago — the end of Nipissing time. There is no evidence of equal weight to argue against these distributional implications, only the disparate and mutually contradictory radiocarbon dates from the Oconto site.

It may be argued, and those who accept the Oconto dates would have to argue this way, that those Old Copper artifacts found in the many areas known to have been submerged by Lake Nipissing may well have been buried **under** Nipissing deposits and have only come to light as a result of erosion, plowing, or other recent disturbance. There can be at present no effective argument against such a position on the basis of distributional studies alone, but this type of explanation must certainly be strained to encompass the number of loci involved. Fortunately, we are not faced with an impasse; we may appeal to the Oconto site iself for information, radiocarbon

dates notwithstanding, that clearly supports the distributional implications of the post-Nipissing age for Old Copper.

In 1961, the authors surveyed by hand level the Oconto site and determined its maximum elevation above the level of Green Bay. Allowing for slight fluctuations in the level of the Oconto River and of Green Bay, from whose elevation the survey was made, it was clear that the **highest** sections of the site (directly at the Oconto monument) were at least five, but not more than ten feet below the level of Lake Nipissing. Additionally, the entire city of Oconto as determined by elevations given by Martin (1916: 513) was eleven to sixteen feet beneath the surface of Lake Nipissing; thus, Old Copper burials found in past years within the city limits of Oconto were at even lower elevations than the highest parts of the Oconto site itself and were even deeper beneath the waters of the lake.

If the Oconto radiocarbon dates are accepted as accurately dating the archaeological remains found there, then these remains must show signs of inundation and water action by Lake Nipissing, which covered the area well **after** both time periods indicated by the radiocarbon dates. Any such evidence of lake transgression over the archaeological features does not exist: all gravels that could be interpreted as lake deposits were dug into by the people who excavated the graves. There are no signs of any lake deposits over the burials themselves; the burial pits were found to be overlaid by sand and not by beach deposits. The tops of the shallow graves averaged only about two and one half feet beneath the present surface of the site, and some pit outlines were clearly discernible in the gravel. Some of the cremation pits did not even extend into the gravel but were confined to the sand layer over it. In the numerous burial pits, there were no indications of disturbance such as might be expected with a rise of lake level, subsequent inundation for many centuries, and then a retreat of the lake shore across the site. Certainly storms must have occurred many times while the lake stood at its Nipissing level, and the shallow depths would imply considerable agitation of the lake bottom, especially when

fronted by a great expanse of open water. Yet, the archaeological features on the Oconto site revealed no trace of such disturbance or reworking. Postmolds were perfectly preserved, even to inclusions of charcoal within them. The floatation of such light material as charcoal and the sinking of heavy objects at least to the level of the gravel would be expected under prolonged submergence and wave action; these conditions are not, however, recorded at the site — on the contrary, charcoal flakes were found in graves in addition to being present in occasional postmolds while heavier copper artifacts were found in the overlying sand, some just a few inches below the ground surface. No evidence of slumped pits were recorded nor were any of the sandy grave-fills water-disturbed; primary burials were likewise in an undisturbed condition and bear none of the signs of prolonged water soaking. To contend that an archaeological site such as Oconto could have been submerged for centuries under a shallow lake whose waters were completely open to the wind and hence to vigorous wave action and then could emerge totally undisturbed in every particular is an impossible thesis to maintain.

Striking evidence of what should have occurred at the Oconto site had the archaeological remains been submerged under Lake Nipissing is provided by the pre-Nipissing component at the Andrews site in Michigan. At this site, burials that suffered submergence under the waters of Lake Nipissing were almost completely obliterated: skeletons disintegrated, burial pit outlines vanished, and only tooth caps remained to provide evidence that burials had in fact been present (Mark Papworth, personal communication).

While there is at present no explanation for the error in the Oconto radiocarbon dates or any known source for that error, it is inescapable on the basis of present evidence that the dates are incorrect. They are totally incompatible with the fact that the locale is under the water plane of Lake Nipissing and the fact that the field evidence as recorded in the publication of Ritzenthaler and Wittry (1952) is inexplicable under the thesis of submergence required by acceptance of

the two radiocarbon dates. Since the archaeological remains representing the Oconto site do not exhibit the necessary signs of lake transgression, it is clear that Indians inhabited the land after the retreat of Lake Nipissing from the area and hence not earlier than 3500 to 4000 years ago.

The other line of evidence bearing on the age of Old Copper that will be considered here is essentially a typological one. Certain of the stone projectile points reported associated with Old Copper materials have been used to demonstrate relationships between Old Copper and other cultures in Wisconsin, specifically the Archaic components at the Raddatz and other rockshelters (Wittry 1959a: 65; 1959b: 251-252).

The stone technology associated with the Old Copper culture is as yet poorly defined. A number of stone projectile points have been found in the to-date excavated sites alleged to represent Old Copper in Wisconsin (Osceola, Reigh, and Oconto) while others have been recovered from the unreported site at Riverside Cemetery, Menominee, Michigan. Other stone points which have been mentioned as possibly belonging to the Old Copper complex in the Keweenaw Waterway area (Quimby and Spaulding 1957: 199) fall outside the typological limits set by materials from the excavated sites; in addition, these points are unassociated among themselves and have no known association with copper artifacts — further reasons why they cannot be included. Comparisons among all the points from the excavated Old Copper sites indicate that they themselves are not as a whole internally consistent: they all cannot be included in the same projectile point type even though they all may be loosely described as "side-notched" projectile points. This situation is particularly confusing in view of the use of some of them to demonstrate possible relationships between Old Copper and other Wisconsin cultures. The problem becomes one of deciding how valid such relationships can be for the Old Copper culture as a whole when they are based on only part of the data available on stone points from only part of the excavated sites.

The stone points from the Osceola site were the earliest discovered points reported associated with Old Copper; they

have acquired the generic label of "Old Copper projectile points" and have been so described in publications of a national rather than a regional character (Wormington 1957: 153; Bell 1958: 68). However, those working with Old Copper in Wisconsin have noted that that stone points from Osceola are not the same as the points reported associated with Old Copper materials at the two other Wisconsin sites — Oconto and Reigh. Ritzenthaler and Wittry acknowledged that the stone points subsequently recovered from the Oconto site varied somewhat from those originally found at Osceola: "none were characteristic Osceola points" (Ritzenthaler and Wittry 1952:211) The points from the Reigh site have also been noted to differ from the Osceola points: Wittry indicated that differences exist between the Reigh points and his own Raddatz Side-notched points, differences which preclude their classification within the same type (Wittry 1959a: 65); these differences would also prevent any identification of the Reigh points with those from Osceola since Wittry is willing to classify both Raddatz Side-notched points and the Osceola specimens within the same type (Wittry 1959b: 251). It should also be pointed out, however, that the original excavators of the Reigh site failed to remark on any significant differences between the Reigh and Osceola points, noting only that they are "similar" (Baerreis, Daifuku, and Lundsted 1954: 33) The Oconto and Reigh points, then, have been cited as differing specifically from the Osceola points by at least some investigators although not by others (in the case of the Reigh points). This situation provides at least two point types reputedly associated with Old Copper and leaves in doubt exactly which of them deserves exclusive right to the Old Copper label. It also renders suspect references in the literature ascribing to any one of the point types information derived from any of the Old Copper sites (Bell 1958: 68), a move legitimate only if data from sites bearing the same kind of point are utilized.

An examination of the stone projectile points (and those identified as knives) from the three Wisconsin Old Copper sites indicates that only two distinct types are present, one

represented by the Osceola specimens, the other by the points from Reigh and Oconto. The whole and fragmentary points from the Osceola site now in the collections of the Milwaukee Public Museum are basically lanceolate in shape, parallel-sided with comparatively broad blades. The bases tend to be squared and fairly massive with the lateral edges of the tang ears tending to be insloping toward the bases themselves; the characteristic basal treatment is deep "u"-shaped side-notching, in most cases at right angles to the long axes of the points. Basal edges are slightly to markedly concave in the larger specimens, more often straight in the smaller ones. Drills and one scraper, evidently made from projectile points, repeat some of this characteristic basal treatment. In length the Osceola points range from an estimated 210 mm. to 57 mm. with an average length of 98 mm.; they range in width from about 48 mm. to 23 mm. with an average of 29 mm. This great range in length, at least, may in some measure be deceptive: the two smallest points from the site (exclusive of the small broken-tipped point illustrated by Ritzenthaler 1957: 314) seem to have been resharpened, and their measurements may not in fact represent original dimensions. All of the Osceola points examined are made of chert, ranging from banded rose chert to solid gray and solid white. Workmanship ranges from good to excellent with a few examples of rough flaking and careless retouch. In no case were any of the basal or lateral edges of any of these points ground smooth.

The fourteen examples from Reigh and Oconto (Baerreis et al 1954; Ritzenthaler and Wittry 1952; Ostberg 1956, 1957) are basically triangular in shape with predominantly straight or slightly convex edges. In some cases, these convex edges give the points a distinctly ovoid shape rather than a sharply triangular one. Basal edges are similarly straight to slightly convex. The points are notched with small but well-defined side-notches that are "u" to "v"-shaped and placed just above the juncture of the sides with the base; in some cases, these points seem nearer to being corner-notched rather than strictly side-notched as such. In size, the points average 59 mm. in length (with a range from 110 to 27 mm.) and 33 mm. in

width (with a range from 53 to 22 mm.). All of them are made of chert with an apparent preference for gray-banded chert.

The Osceola points contrast strongly with the points from Reigh and Oconto in basic overall shape: the Osceola specimens are parallel-sided, lanceolate points whose whole blade configuration is distinct from the triangular to ovate-triangular shape of the points from the Reigh and Oconto sites. While both point types may be loosely described as "side-notched", the bases produced by this side-notching are distinctly different in either case. Width to length ratios for these two sets of points further emphasize their distinction; the ratios separate in every instance into mutually exclusive camps — the Osceola width to length ratios do not overlap in even a single measurement with those from the Reigh and Oconto ponts. While there is overlap in length measurements, absolute measurements indicate a further separation of the generally larger points from the generally smaller Reigh and Oconto points.

These two projectile point types, both reputedly associated with Old Copper material, indicate either that the Old Copper made at least two distinctly different types of stone projectile points or that the association of one of them with Old Copper is fortuitous. Claims for a long development of Old Copper in Wisconsin — always the easiest solution to problems of conflicting data — might conceivably allow for the association of two different point types with copper material at widely separated intervals of time were it not for the fact that Reigh and Osceolo, each with a different stone projectile point type, are very close in time. Radiocarbon dates for Osceola and Reigh place these sites at 3450 + — 250 B. P. and 3660 + — 250 B. P., respectively (Ritzenthaler 1958: 173-174). The wide geographic separation between Osceola and the center of Old Copper distribution farther east might also allow for a difference in stone typology although differences that could reasonably be expected in other artifacts do not occur.

Actual association of these two different stone projectile point types with copper material at the known Old Copper

sites in Wisconsin is not equally convincing in all three cases. The Osceola site in particular is open to attack on the validity of the association of the Osceola points with the Old Copper implements also found in the site. The main feature found at Osceola was a large pit, which at the time of excavation was some 70 feet long and 20 feet wide; evidently parts of this pit had already been removed by erosion into the Mississippi River by the time excavation commenced, and the original site was somewhat larger (Ritzenthaler 1957:188). This pit averaged about five feet in depth and consisted of two strata, which could be differentiated from each other only on the basis of a concentration of burials in the lower half. The upper stratum was almost sterile except for grit-tempered, cord-marked sherds; broken tools (presumably only of stone); and flint chippage (p. 188). All of these artifacts continued throughout the pit down to its base and were mixed in the lower burial layer. The lower layer contained many bundle burials, and it is this bundle burial layer that is considered to represent the major Old Copper occupation at the site. Within the bundle burial layer were copper artifacts and stone projectile points as well as pottery and chippage. In most cases, these different classes of artifacts were totally unrelated to any of the burials (p. 188); and in the case of the stone projectile points, there is no evidence presented to indicate direct association of any kind with Old Copper implements within the site. The bundle burial layer, then, contained Old Copper artifacts, pottery, and projectile points, none of which was clearly in association with either of the others. For reasons that are not clear, Ritzenthaler was able to completely exclude the pottery from association with the Old Copper artifacts and the stone projectile points although he did note that the projectile points, like the pottery, "fall within the typological class assigned to Woodland" (p. 202). Subsequent information indicates that the projectile points can in fact be associated with Archaic artifact assemblages elsewhere (Titterington 1950), but on the basis of the evidence presented from Osceola, it seems just as likely that the pottery and the stone projectile points were in association as it does the stone points

and the Old Copper artifacts were associated. As Miles pointed out a decade ago, the original interpretation of the Osceola site "raises questions of the possibility of segregating materials with a common distribution throughout a fill" (1951: 242) and makes the selection of what artifacts were associated with what other artifacts a matter of arbitrary choice. In view of the uncertain nature of the association of Old Copper materials with the stone projectile points from the Osceola site, it is impossible to state that the Osceola points are in fact part of the Old Copper complex. On the basis of information from the Hemphill site (Titterington 1950), it seems possible that the Old Copper culture was in fact contemporary with the makers of the Osceola points, but it will take further excavation of Old Copper sites to demonstrate that the makers of the one did in fact manufacture the other.

Both of the stone projectile points found in association with burials at the Oconto site (Ritzenthaler and Wittry 1952) were unfortunately not with burials containing diagnostic Old Copper artifacts. It seems likely that these burials are Old Copper burials in view of their placement in what is apparently an extensive Old Copper cemetery. Judging solely from the evidence from this site, however, their lack of direct association with any other copper material leaves their status open to question.

Of the fourteen projectile points (or knives) found at the Reigh site (Baerreis **et al** 1954; Ostberg 1956, 1957), four were directly associated in burials with copper artifacts. Burial 26 (Baerreis **et al** 1954: 15) contained one stone point at the skelton's hand as well as a single conical copper point found near the head. Burial 23 (Baerreis **et al** 1954: 18-19) contained a stone point near the right arm and a conical copper point "grasped in the left hand"; this burial also contained an elk antler axe handle, hematite pebbles, and worked sections of a swan humerus. The two other stone points were associated in a burial that also contained part of a copper awl (Ostberg 1956: 31). Other stone points were in burials associated with an elk antler axe handle (burial 5) and swan and other non-human bones (burial 11). The evidence from

Reigh is sufficient to indicate that the stone projectile points found with the burials are indeed directly associated with Old Copper material although not as yet directly with such typical artifacts as tanged spearpoints, crescents, or spuds. All of these, however, were found in other burials or elsewhere on the site, which produced artifact for artifact more Old Copper material than the Osceola and Oconto sites combined. The direct association of Reigh stone points with Old Copper material removes any doubt about the status of the Oconto points, which are of the same type.

Removal of the Osceola points from any proved association with Old Copper artifacts also effectively removes any basis for linking Old Copper with the Archaic levels containing Raddatz Side-notched points at the Raddatz Rockshelter, the Durst Rockshelter, and the Governor Dodge State Park Rockshelter. Wittry has based his connections between Old Copper and these levels squarely upon a postulated resemblance between Raddatz Side-notched points and the Osceola points: "projectile points of the same type [that is, the same as Raddatz Side-notched] are the dominant type associated with the Old Copper complex . . ." (1959b: 251). The Old Copper point type considered here by Wittry excludes entirely the specimens from Reigh (Wittry 1959a: 65) and by extension also those from the Oconto site; it includes solely the points from Osceola. On the basis of the presumed association of the Osceola points with Old Copper and the equation of Raddatz Side-notched points with the Osceola points, the lower levels of the three rockshelters are described by Wittry as "Old Copper 'without copper'" (1959b: 251). Since direct association of the Osceola points with Old Copper is at present lacking, Wittry's identification of these levels with Old Copper is without any supporting evidence.

Removal of the Oconto radiocarbon dates and any known association between Old Copper and the Raddatz Side-notched complex makes the general time period indicated by the radiocarbon dates of Reigh, Osceola, Riverside Cemetery, and Isle Royale more likely for the Old Copper culture as a whole. There is this to be said for the problem of dating Old

Copper, however; ultimate agreement as to its general time period depends not only on more and better radiocarbon dates but also on a better understanding of the limits that are set by the label "Old Copper". Occasionally it seems as if the term were applied to almost any component bearing copper tools, even those of a very generalized nature; and there is at present a lack of agreement as to how much or how little of the copper work in the Upper Great Lakes should be called Old Copper.

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MORE TRUNCATED-BARB POINTS FROM WISCONSIN

Robert Ritzenthaler

The June issue of the Wisconsin Archeologist carried photos of truncated-barb or clipped wing points in the collections of Mr. Phil Wiegand, and Mr. Paul Scholz along with a plea to members to examine their collections and report similar points. Response has come from Mr. James Weida of Milwaukee, and Mr. M. S. Thomson of Sheboygan, whose points are illustrated here. Thus far these points seem to be concentrated in the Counties of Dodge, Sheboygan, and Dane. We would appreciate your sending us such points along with the data to the writer, Milwaukee Public Museum, Milwaukee 3, Wisconsin. They will be photographed and returned within a few days.

Your attention is called to an article on this point type by Charles Brown in the Wisconsin Archeologist, Vol. 20, No. 1, Old Series, page 18 entitled Angular Barbed Arrowpoints, in which six points from Dane County are illustrated.

Clipped-wing points starting from top left: Washington County, No data, Dodge, Sheboygan, Sheboygan. From the James Weida collection, Milwaukee.

Clipped wing points from Sheboygan Marsh area, Sheboygan County. M. S. Thomson Collection.

THE HASTINGS CAMPSITE
KENOSHA COUNTY, WISCONSIN

Phil Sander

In the fall of 1960, south of the city limits of Kenosha, an earth moving project leveling a sand knoll for a new subdivision exposed lithic debris and artifacts indicating the area to be a former prehistoric Indian camp site.

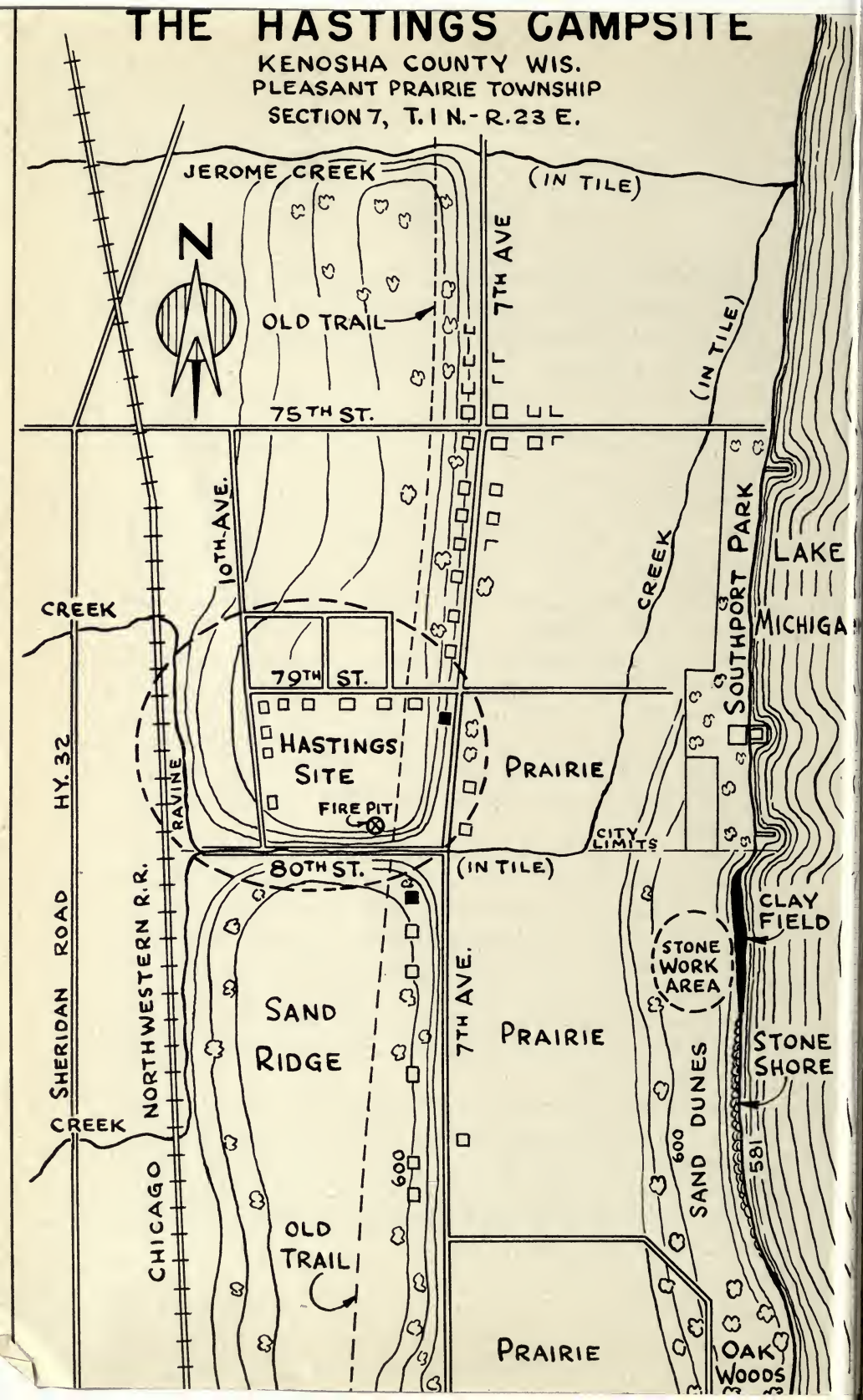
The site (Fig. 1) is described as part of the south half of southeast quarter section 7, T. IN.-R. 23E. or bounding 79th St. on the north, 7th Ave. on the east, 80th St. on the south and the Chicago North Western Railroad on the west.

The writer and Robert Hasting cooperated in salvaging and recording an assemblage of cultural surface material found in the sand of the now obliterated knoll. The area is identified as the Hastings Site. Hastings' grandfather formerly owned the property.

The geological features of the ancient sand ridge, oriented north and south, on the west side of 7th Ave. are clearly visible from 66th St. south, passed 87th St. The site is an old sand knoll that is part of an undulating sand ridge which traverses Pleasant Prairie Township. The ridge is approximately one half mile west of and almost parallel to Lake Michigan.

These dunes, of Pleistocene origin, are the remains of an abandoned shore line left by a stage of the receding Glacial Lake Chicago. This early lake covered the entire city of Kenosha, and the three stages of shore line are still visible. Lake Chicago was formed during the late Wisconsin stage of glaciation, by the Lake Michigan ice lobe and when the ice retreated the melt waters built this large body of water. A time estimate for the last glacial period is approximately 10,000 to 12,000 years ago.

The water, or lake, that was impounded just ahead of the dying fringe of the great ice mass built up these old beaches. First wave action carrying the fine sand cast it upon the shore, later as the sand dried, strong winds moved the sand over the ground surface forming drifts, a long series of these drifts thus made up the old shore line ridges.


THE HASTINGS CAMPSITE
KENOSHA COUNTY WIS.
PLEASANT PRAIRIE TOWNSHIP
SECTION 7, T. 1 N. - R. 23 E.
JEROME CREEK
(IN TILE)
N
OLD TRAIL
7TH AVE
(IN TILE)
75TH ST.
10TH AVE.
CREEK
CREEK
SOUTHPORT PARK
LAKE MICHIGAN
79TH ST.
HASTINGS SITE
FIRE PIT
PRAIRIE
RAVINE
HY. 32
SHERIDAN ROAD
NORTHWESTERN R.R.
CITY LIMITS
80TH ST.
(IN TILE)
CLAY FIELD
STONE WORK AREA
SAND RIDGE
7TH AVE.
PRAIRIE
STONE SHORE
CREEK
CHICAGO
600
SAND DUNES
581
OLD TRAIL
PRAIRIE
OAK WOODS

At the top of the ridge was the favorite locations of trails and camp sites of the early prehistoric people. Several other sites on the ridge, have been located and are now under preliminary survey and study.

Two small watershed creeks once meandered from the west, and met at the south west corner of the site; the main creek then broke through the ridge at 80th St. flowing east until it almost touched a second ridge. The stream then turned north and joined the old Jerome creek at about 67th St. and First Ave.

This site offered the early inhabitants and travelers good access to fish, game, eatable plants and materials, with which to make shelters and implements. The larger flora, on both sides of the creek valley, was dominated by oak trees. The creek banks, until the recent fill-in, abounded with ferns, berries, wild onion, cattail, skunk cabbage and other small flora. All grew in great profusion.

At the site many small knolls were constantly gouged out by intense wind erosion. The fine shifting sand formed "blow pockets" or basins, and it was in these pockets that cultural material was exposed. Materials that constantly showed up on the surface were fire-cracked rock, flakes and spalls of of chert, an occasional point or spearhead as well as a number of hammer stones.

Very few pieces of skeletal material were found, which could be expected due to the highly acid condition of the sand. Some unidentifiable bones were salvaged, but crumbled with slight handling. Other bone material was of recent time.

A knoll on the west side of the site revealed more than 85 pieces of broken pottery, ranging from one-half to three inches in size. The potsherds that were recovered suggest that they are a product of a Late Woodland Horizon (Fig. 3A). This group of Madison Cord Impressed sherds is grit-tempered and cord-roughened with three incised lines around the circumference.

Other pieces of rim sherds are classified as Madison Plain. The rims of four pots were collected, but no size or shape of the pots could be determined.

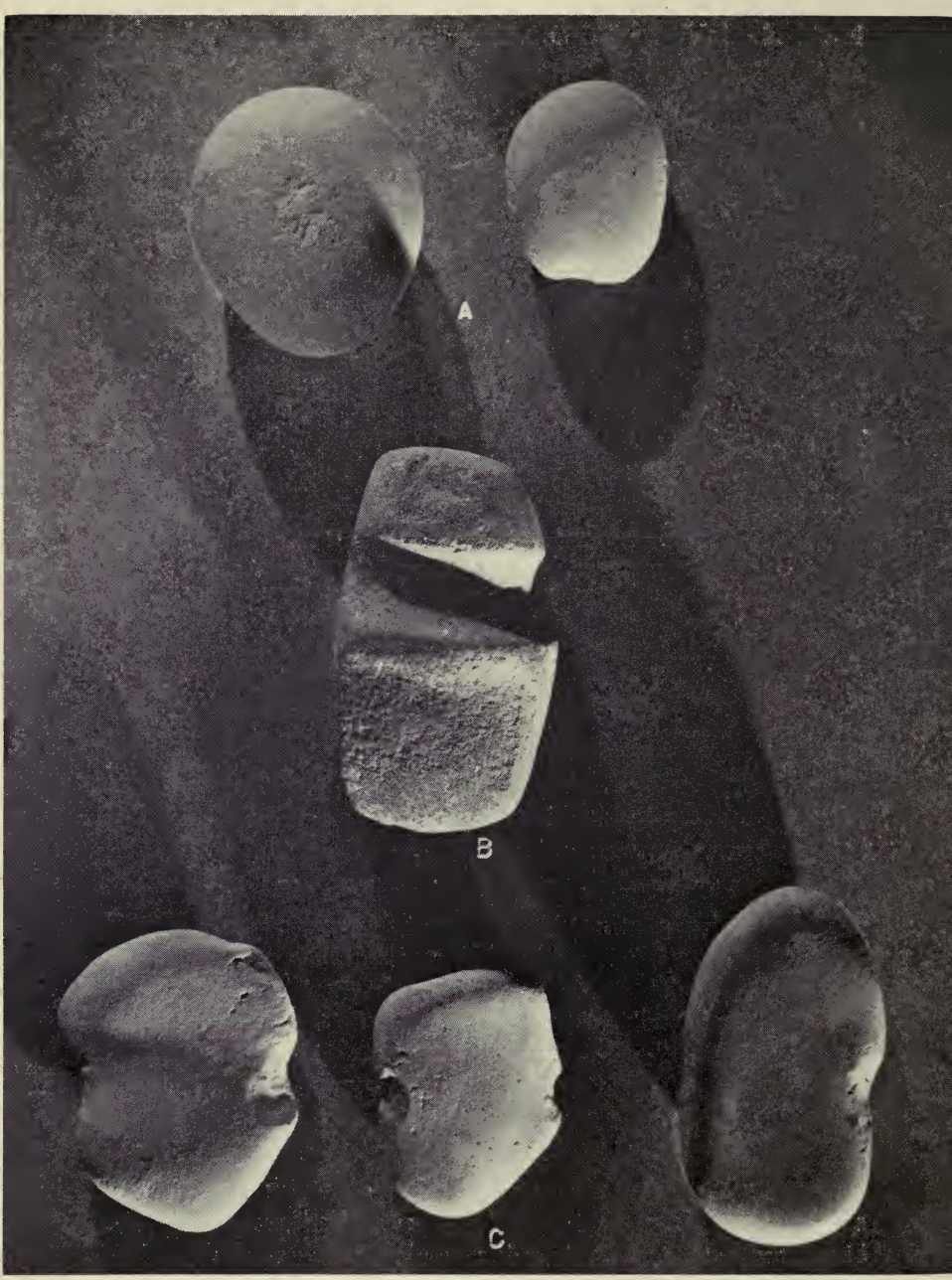


FIG. 2. Hasting Site Stone Artifacts

The clay material used in making the pottery may have been obtained from a clay field one-half mile due east of the site, at the shore line of Lake Michigan. Lake erosion has washed away a 12 to 14 feet high sand bank; the clay is exposed at 3 feet above the lake level.

Six hammer stones (see Fig 2A) and an uncounted number of broken hammers show that some time was spent at the site to finish axes, spears and points. One three-quarter grooved axe (Fig. 3b) was found, when the earth moving equipment shifted the sand into a ravine. As for source of stones, there was no need to quarry or dig in a gravel outcropping, because a choice assortment of rolled and smooth stones could be found on the beach, just due south of the clay field.

Chert is quite abundant as well as a variety of colored **boulders and small rocks** at the water's edge. Between the site and the beach is an area that appears to be the former work site, many broken pieces of igneous and other types of suitable stones can be found in approximately a square of 300 yards. Found on this area were, one incomplete axe, part of a knife and 6 sinkers (see Fig. 2C) or hold downs. This has all the signs of a place where implements were roughed out and later finished and polished at the camp site. No broken igneous type stones were found at the camp site, except spalls and chips of chert and broken fire stones. Over 1,000 chips and flakes were salvaged. One large stone 6.5 x 4 inches with seven split sides was found. This stone was probably prepared for an axe, but the stone developed a crack thru the center and was discarded. It is remarkable how the ancient craftsmen could split rock with such skill.

Two fragments of copper (Fig. 3B) were found among the midden. Both pieces were hammered and worked. Copper indicates that there may have been some trading with the Winnebago area, or may have been found locally in an outcropping of the glacial hills. Float, or glacially deposited, copper is known to have been found in five different locations in Kenosha County.

Two days before the earth movers disturbed the sand knoll on the south edge of the site, the writer and Hastings were

FIG. 3. Hasting Site Artifacts.

probing in the sand for rocks and artifacts. (My probe is an instrument made from a piece of steel drill rod 3/16" round and 24" long, with a handle on one end and a sharp point on the other and it can easily be inserted into the sand to search for cultural material.) The point at this location located a rock and we proceeded to dig a test pit. The rock turned out to be fire stones and when the pit was dug 40" x 40" square and approximately 20" deep, charcoal started to appear. The sand was leveled off and a clear view of a former fire appeared with charcoal and carbon leaching showing. All sand was screened and in addition to the fire stones a few chert flakes were found. Unfortunately no further work could be done, as the find was destroyed two days later by an earth mover.

The assemblage of chert implements collected shows the crude workmanship typical of Late Woodland Culture and includes hunting points, knife, scraper, drill, blanks and a number of broken items (Fig. 3). Several points show a better quality of flaking, but the majority lack the finish seen in other cultures. A triangular flake point and thumbnail scraper (Fig. 3G) are evidence that an Upper Mississippi people also used the site.

Many broken hammer stones were noted showing pecking along the edge or center of the stone. All are water rolled stones and were apparently picked up along the beach of Lake Michigan.

In concluding this report, a time period that the Hastings Camp site was occupied, is estimated to fall somewhere between 500 - 1000 A. D. The site was in all probability a camp or work site. It is on the old Chicago-Milwaukee trail that led past several Indian villages. Many of the ancient people constantly roamed this trail on the western shore of Lake Michigan, sometimes looking for a fresh source of food, sometimes, perhaps, being pushed by a more powerful people.

The historic Indian residents of the site were Potawatomi and are known to have been scattered throughout eastern Wisconsin; when they arrived is little known. These people are of Algonkin speaking stock, originally coming from

the east, around Lake Michigan. The Wisconsin Archeologist, September, 1936, tells of the Potawatomi cession. In 1883, the Potawatomi, Ottawa and Chippewa ceded to the government a territory extending from Gross Point, 12 miles north of Chicago, to the foot of Lake Winnebago, and from Lake Michigan and the Milwaukee River west to the Rock River.

With the treaty held at Chicago, September 26, 1833, this tribe gave up the last of their lands in Wisconsin. Included in this cession were prairie and forest lands now forming Kenosha and Racine counties, the eastern half of Jefferson County, the eastern part of Dodge County, all but the northeastern corner of Washington County, the southern part of Fond du Lac County, the eastern half of Rock County and the entire Walworth and Waukesha Counties. It is estimated that by the terms of this treaty, the Potawatomi parted with about 5,000,000 acres of land in northern Illinois, southern Wisconsin and Michigan. In this region they had villages at Milwaukee, the Muskego lakes, Waukesha, Racine, Lake Geneva and elsewhere.

This treaty, approved on February 21, 1835, was intended to remove all of the Potawatomi to west of the Mississippi, but many fled to Canada. Some remained in Wisconsin, and about 700 settled on the large tract of land provided for them on the Missouri River, near Council Bluffs in Iowa. In 1846, the influx of settlers caused their removal to a reservation in Kansas.

PICTOGRAPHS IN THE LAKEHEAD REGION

Dr. Herbert W. Kuhm

Painted on the rock surfaces at intervals along the intricately meandering waterways of the Lakehead country to the west, north and east of Lake Superior are pictographs — aboriginal paintings or drawings on stone — in red, black, or white pigment.

Although pioneer research on these pictographs had been conducted for the Geological Survey of Canada by William McInnes as early as 1894, a re-survey on a more exhaustive scale was begun in 1957. Since that time, through close cooperation involving the Wilderness Research Center in Minnesota, the Royal Ontario Museum, the Quetico Foundation, and the Province on Ontario's Department of Lands and Forests, a systematic recording of these pictographs has been yielding notable results.

The first two seasons of combined effort brought to light 36 sites, mainly in the Canadian Shield region west of Lakehead with a few to the east of Lake Superior. After the third season this number was expected to exceed 60, with the number of individual pictographs estimated at some seven hundred.

The prehistoric Algonkian "picture-writers" chose for their canvases the naked rock surfaces free of lichens, or the waterside cliffs where the overhanging rocks protected the vertical surfaces from erosive water seepage or dripping and where the surface could dry quickly after a storm. These aboriginal artists used the simplest tools and the most elemental material for the rock painting: their fingers served for brushes, while their paint pigments came frome natural sources in their environment.

Although pictographs are by no means confined to the Lakehead region, they seem to appear most frequently in that area. Today as a canoeist travels along the waterways of northeastern Minnesota and southwestern Ontario, he lifts his eyes now and again to some cliff towering above him to perceive figures of animals, canoes, men, and unidentifiable forms or pure abstractions painted in vari-colored pigments on the face of the rock.

Neither the rough unevenness of the surface itself, nor the

DEER ON
AGAWA ROCK

MOOSE,
LAKE MISSINAIBI

DEER ON
AGAWA ROCK,

MOOSE,
HEGMAN LAKE,
MINNESOTA.

MOOSE,
CROOKED LAKE,
MINNESOTA.

ANIMAL,
LAKE
MISSINAIBI

MOOSE,
LAC LA CROIX
QUETICO PROVINCIAL PARK

MOOSE
CROOKED LAKE
MINNESOTA

fissures, faults, and veins of contrasting textures that often crossed it, were deterents in the placing of the stone-age artist's painting. At a site on Agnes Lake in Quetico Park the paintings almost obliterate themselves against the stark contrast of dark and light minerals in a horizontally banded gneiss. There is even one example, frequent in historic paintings, of later paintings being superimposed on earlier ones.

A majority of the sites could have been painted from a bark canoe at varying water levels; a few only from convenient rock ledges. Some are high above the reach of the tallest man, which led Schoolcraft to observe: "There has been noticed a striking disposition in the persons inscribing these figures, to place them in positions on the rock not easily accessible, as on the perpendicular face of a cliff, to reach which some artificial contrivance must have been necessary." Schoolcraft failed to take into account that the level of most of the ancient lakes was higher formerly than at present, as indicated by bench marks and ancient beaches, and that the deep snow of winter could raise the painters still higher by several feet.

Pigments

Anthropologists with the joint research expeditions have found only three distinct colors: traces of black appear on one site; white, as yet unanalysed, on three; and red predominates on all. As to the nature of the red pigment, it is believed to be derived from weathered iron ore, the same red Ochre that has been in universal use from the earliest times.

The pictographs observed by Dr. Grace L. Nute, all in the area of Quetico Provincial Park of Canada and the Superior National Forest of Minnesota, were produced by the use of red pigment. Dr. Nute noted that the red substance used for painting rock inscriptions may have been fired, and found some indications of that process. A chalky earth, found in certain places in the Lake Superior region, might conceivably have been used. A "quarry" of it was reported on the north shore of Basswood Lake west of Lake Superior.

As early as 1807, John Johnston, a fur trader at La Pointe, mentioned that the black dye of the Algonkians was found in

rocks on Presque Isle near Carp River, and described Presque Isle as "the peninsula which projects northeast and is curious from being one half freestone and the other basalt. The Indians find in the fissures of this last (the basalt), a black substance not unlike limestone, which, when pounded, they put in a small bag and boil with any stuff they wish to dye black; the colour, however, is not bright, though lasting; the same quantity will serve many times without any apparent diminution of strength." Here then, Dr. Nute holds, may be the source of the black dyes so much used by the Chippewa and other Algonkian tribes.

Binders

One of the "puzzlements" associated with these pictographs is the chemical analysis of the paint, which has outlasted practically every pigment that modern man has succeeded in concocting. The mystery is the binder. Pieces of weathered hematite on prehistoric Indian village sites could have been used as crayons on the harder rocks, and the pigment spread by wetting and applying the finger without the use of any binder. Yet there was an abundance of choice in the matter of a binder. Fish oil was plentiful, and bear grease and other animal fats were available, as well as tree resins, birds' eggs, beeswax and blood.

Museum tests of the Lakehead binder specimens have de-

GROUP ON AGAWA ROCK, LAKE SUPERIOR PROV. PARK, ONTARIO.

tected minute traces of organic matter, insufficient for carbon dating, which may be the remains of a binding agent. However a century of exposure to the harsh extremes of Canadian weather could conceivably destroy the adhesive power of any binder. Some authorities hold that it is the small percentage of iron present in most Cambrian rocks that forms a bond with the ferrous pigment.

This question of binder bears further delving into. Writing of the Huron, circa 1600-1650, Dr. George I. Quimby in his "Indian Life in the Upper Great Lakes" states that "most of the men painted their faces and bodies with a variety of designs, mostly in black and red. . . The pigment obtained from mineral and vegetable sources was mixed with sunflower oil and bear fat."

Dr. Grace Nute records that "a successful red dye was made by the Chippewa (in the Lake Superior country) from the red alder." Joseph Norwood, who conducted a United States geological survey in the middle of the last century, reports "vermilion" painted on the rocks at Namokan Narrows east of Rainy Lake.

Julian H. Steward, writing of pictographs found in all parts of the United States and Canada, states: "We have no evidence of the method employed in making them, but assume some kind of a simple brush was used. The colors comprise red, black, white, yellow and orange. . . . Red is by far the most common color in all areas. Black and white are next in importance. We cannot definitely state the ingredients used since few analyses have been made of the pigments. Red, however, is probably often hematite or ochre and possibly cinnabar; black is charcoal or some manganese compound; white may be lime; yellow is probably ochre. Many mortars containing traces of pigment show that the paint was probably mixed with grease and ground in these."

For comparison of pigments and binders we backtrack to Wisconsin where little is known about rock paintings, with but three sites reported, with information very vague on two. However, the third site, discovered in 1949 rear Mayville, has been well documented by photographs and descriptive

details by Dr. Edgar G. Bruder. Still in an excellent state of preservation, the Mayville rock paintings were done in both outline and solid with a resin-like paint, black in color due to addition of carbon probably in the form of charcoal.

Quoting Dr. Bruder: "The color of the paint is black, with a very faint touch of black-maroon edging, and a slight metallic sheen overcast. At first glance it appeared to be of mineral origin, but to be assured, I had it analyzed from a drop which the prehistoric artist spilled on the rock immediately below the painting. The results showed no trace of manganese, minerals which I had believed present, but instead an organic material, a resin-like substance resembling tar. The dark color was due to carbon. We are making additional analysis of this paint, which had penetrated into the rock for a distance of two millimeters."

In further pursuit of the identity of the binder used with the pigment in the Mayville pictographs, we interviewed Dr. Bruder of this subject in April, 1961, during the course of which conversation Dr. Bruder said he initially believed the pigment to be of mineral origin, such as iron or manganese, this opinion being arrived at largely by proximity and abundance of these inorganic substances in the immediate vicinity, which in later historic times became the site of extensive iron mines. Dr. Bruder subsequently found this assumption to be erroneous and came to the conclusion that the pigment was constituted of an organic substance, such as indestructible carbon, obtained from charred wood, which was mixed with a binder of some saturated stearic fat obtained from deer, bear, or other native animal. It is due to this permeative binder that Dr. Bruder attributes the great penetrating action of the pigment which reached a depth of two millimeters into the dolomite limestone wall.

Another theory meriting consideration, according to Dr. Bruder, is that whereas the paintings show a reddish or maroon-colored border, the paints may have been made up of some plant or root oils held in suspension in a fatty base of animal fat, and that these colors originally were red, but oxidized eventually through the intervening ages to black. Dr.

Bruder stated that "a red vegetal dye does not always furnish a red paint when mixed with some fatty vehicle which might change its chemical consistency."

Paralleling the reddish border of the Mayville pictographs is the record of Indian rock paintings in Wisconsin having a bluish-black color. These were reported as existent in 1889 by T. H. Lewis in Samuel's Cave, La Crosse County.

Subject Matter

Whatever the binder it is generally held that the usual painting tool was the aboriginal artist's own finger. Most lines are finger width, or could have been made by turning the finger on edge. The Indian usually outlined his forms, occasionally filling them in.

In representing human figures, of which well over a hundred occur in the Lakehead pictographs, the aboriginal painter often used a "stock-figure" core. The human figures provide little more than the essentials for recognition. Hands and feet rarely appear. No women can be recognized, and male sexual features appear only twice. Hair is indicated once; clothing never. There are a few vague suggestions of feather headdresses, and two pipes are the only "accessories" depicted. Canoes are represented frequently.

However, the skillful presentation of animals is the most surprising feature of these pictographs for the sharp eyes of the Indian observed and captured every stance and movement of the living animals that were his quarry. Even identifying details are captured in accurate and sensitive delineation. There are magnificent moose, three of which on the rocks of Lac la Croix in the Quetico move as convincingly as the bison on the cave walls of Altamira in Spain. Several white-tail deer, a number of caribou, bears and rabbits, fox and trout, can be identified among the numerous animal forms appearing. Most of the remainder can only be described as "some sort of animal, fish, or bird."

As an addenda to the Ontario pictographs we note in an early (Dec. 1937) issue of the **Wisconsin Archeologist** that Col. Howard Greene, of Milwaukee, and a party were traveling by canoe in the Rainy Lake region and found some

Indian pictographs on Irving Island, Kasakokwog Lake. "In passing close to the cliffs at one point," writes Col. Greene, "we found marks of hands in red paint, reaching from near high water mark about eight feet up. On further investigation we found figures of a bull moose and calf, and an Indian smoking, all of which were photographed."

Analysis of Petrography

An attempt to analyse the technique, subject-matter and style of the Lakehead petrographs is limited by traditional standards developed in our own society. In doing so we must recognize how limited these standards are in dealing with an alien culture. We must keep in mind that what we may value most in this art might have meant nothing to the Indian artist; and what we dismiss as trivial might have expressed his deepest emotions.

In discussing the meanings and purposes of petrographs, Steward says: "These can only be ascertained through careful study of the art and symbolism of present Indian groups and a comparison of these with pictographic elements. Many attempts have been made by various authors to deal with this vexing problem. Some explanations are guesses which fall within the bounds of probability. Others are theories of extreme absurdity. Attempts to ascertain the meanings from Indians living at present in the regions where they occur have invariably met with failure. The Indians disclaim all knowledge of their meaning and origin.

"Since design elements and style are grouped in limited areas, the primitive artist must have made the inscriptions with something definite in mind. He must have followed a pattern of petrography which was in vogue in his area. He executed not random drawings, but figures similar to those made in other parts of the same area. The elements of design, then, must have had some definite significance which was the same over wide areas."

The archeologist is only beginning to unearth the buried evidence of the woodland cultures of the Canadian Shield and the Superior Lakehead area; the ethnologist has had little time to correlate the wealth of historical material; and only

when their work has been done can the anthropologist reconstruct a picture of the whole culture from which these rock paintings emerged.

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THE PIPE SITE

Paul Koeppler

A portion of an Upper Mississippi culture village site was uncovered during gravel digging operations near the community of Pipe, Wisconsin, about five years ago. The site is located on the Gregory Hilt farm, Calumet township (N. W. ¼ of N. W. ¼, section 26), Fond du Lac county. The village sits on a bluff running parallel to a small stream which in turn empties into the east shore of Lake Winnebago about three quarters of a mile away.

Much of the site had been destroyed when I first visited it with Ernest Schug in 1958. However, the south east corner of the gravel pit was undisturbed at that time and it is in this area that I acquired most of my collection.

Commercial gravel removing operations had exposed cross-sections of prehistoric refuse pits along the walls of the gravel pit. The rich, black earth of the refuse pits contrasted sharply with the surrounding gravel, and nicely outlined the depth and width of each pit. Most of the pits were either square or rectangular in vertical cross-section, and presumably the same

FIG. 1. Square-bottomed Refuse Pit.

in horizontal section (Figure 1), though in a few instances I did notice that they were oval in horizontal shape, as the width varied when digging through the pit. Most of the pits have sharp, square corners at the bottom, with a few exceptions where they were rounded, as can be seen in the photograph.

The refuse pits measured from two feet, three inches, to fifteen feet, eigth inches, in exposed width, and as much as six feet, three inches, in depth. In many cases they ran into one another, forming one extended pit. In one instance four different refuse pits joined.

One very unusual pit which was 6' 9" wide and 5' 8" deep had a four inch layer of ash extending the full width. This layer was six inches from the bottom of the pit. There were a few fragments of potsherds mixed with the ash which showed no sign of being burned.

In 1958 the pits extended higher up on the bluff and contained more refuse such as cracked bone, fish bone and clam shells. Also there were more artifacts in these pits. Since the higher part of the site was constantly being destroyed, I had to work down the bluff toward the creek. The further down I worked, the less refuse the pits contained, until in 1960, about half of the pits were sterile. Some contained only a few pieces of charred wood or small fire hearths.

On three occasions I encountered human bone in with the refuse. One was an upper leg bone which was in two pieces, having separated at an old break. In no case was any of the human bone cracked for the marrow.

One small pit, measuring 2' 6" wide by 1' 9" deep, contained a fire hearth at the very bottom. About 90% of the refuse in this pit was fish bone or scales. Also in with the refuse was a thumb scraper. Perhaps this was the same tool that was used in cleaning the fish.

In April of 1960, while in the process of cleaning the face of the gravel pit for pictures, I noticed that there was a two inch layer of seemingly undisturbed earth at the bottom of one refuse pit. Directly underneath was a second refuse pit containing the burial of a small dog. The following weekend I uncovered two more dog burials in the upper pit. These two

FIG. 2. Pipe Site Artifacts
Left, bone awls; upper right, rimsherd; center, pendants; lower right, clay pipe fragment..

appeared to have been thrown in with the general refuse. The three dogs were all the same size and the same general appearance.

I have enjoyed many weekends digging and recording at this site. My only regret is that it all had to be done only one step ahead of the front-end loading equipment.

Interesting Wisconsin Specimens

UNFINISHED AWL
Deer ulna with carpal bone unremoved and interior bone membrane still intact. From the M. S. Thomson Collection.

BROKEN BIRDSTONE
With decorative notches along the top. Sheboygan County. M. S. Thomson Collection, Sheboygan.

The last few months have been particularly productive of new members. We especially thank Bob Hruska who signed up a flock while excavating the Old Copper site at Menominee, Michigan. We now have 490 members including the following new ones:

Thomas W. Edwards, 5719 W. Goodman St., Chicago 30, Ill.

Richard G. Sattery, 11700 Danville Drive, Rockville, Md.

Ernest Collard, 2104 - 11th Ave., Menominee, Mich.

Alex Feucht, 438 Breckenridge St., Mayville, Wis.

Lon L. Mortensen, 303 E. Park St., New Lisbon, Wis.

Harry A. Mortensen R. Th., 303 E. Park St., New Lisbon, Wis.

Wisconsin State College, College Library, Stevens Point, Wis.

Jack Rastall, 1203 Daggett St., Marinette, Wis.

G. David Jones, 16 Brokaw Place, Appleton, Wis.

Charles Cary, 219 S. Rankin St. Appleton, Wis.

James W. Joachim, 250 McCagg St., Peshtigo, Wis.

Stanley Ostrenga, R. 2, River, Wallace, Michigan

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Paul E. Koeppler, R. 1, Box 394, Marinette, Wis.

Lloyd Randall, Route 1, Crivitz, Wis.
Mrs. Kay Wood Levenberg, 3215 'O' Street, N. W., Washington, D. C.
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James A. Schwarz, 22 Walter St., Madison, Wis.
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Michael P. Hoffman, University of Illinois, Department of Anthropology, 137 Davenport Hall, Urbana, Ill.
Miss Ilga Cakans, 3055 N. Newhall, Milwaukee, Wis.
Miss Jean Horlach, 3156 N. 7th St., Milwaukee, Wis.

NECROLOGY: The Society sadly records the death of member Edward B. McCabe on October 4, 1961, at the age of 46.

NEW MEETING PLACE of the Milwaukee Chapter is the Atkinson Public Library on 19th Place, just north of Capitol Drive. TIME remains the same . . . 7:30 P. M., third Monday of the month.

THE MILWAUKEE PUBLIC MUSEUM - OSHKOSH PUBLIC MUSEUM summer's dig at Menominee, Mich. was an exceedingly successful one. Under the direction of Robert Hruska of the Oshkosh Public Museum, this Old Copper site produced the earliest textiles in the Great Lakes area, and a new blade type (45 being found with one burial), plus enough charcoal for radio-carbon dating. A full report on the site will be published in a forthcoming issue.

AZTALAN, a one hour 16mm movie in color showing excavation and restoration is now available for rental fee of $5.00. A magnetic soundtrack narrates the film, but can only be heard through a magnetic projector. An interesting program for your group. Contact R. Ritzenthaler, Milwaukee Public Museum, Milwaukee 3.

A catalogue of 43 plaster cast reproductions (all illustrated) of Museum specimens can now be obtained for 25¢ from the Milwaukee Public Museum. Descriptions and prices accom-

pany the illustrations. Unique Christmas presents.

Orders are now being taken at the Milwaukee Public Museum for a portfolio of 36 SIOUX INDIAN DRAWINGS in full color with descriptive booklet. Price $6.50. Prepublication price (before Dec. 30, 1961) $4.50.

A museology bibliography OF MUSEUMS AND MUSEUM WORK is available for $2.50 by writing the Milwaukee Public Museum.

Do you know about the magazine AMERICAN INDIAN TRADITION? The last issue should be of especial interest to collectors with an article on Indian Peace Medals & Central Algonkian Beadwork. Copies can be obtained thru AMERICAN INDIAN TRADITION, P. O. Box 136, Alton, Ill., or from the Milwaukee Public Museum Sales Counter. Price 65¢.

ARCHEOLOGICAL SOCIETY MEETINGS

Until further notice all meetings of The Wisconsin Archeological Society will be held on the third Monday of every month at the Atkinson Public Library on 19th Street, just north of Capitol Drive at 7:30 P. M. The December meeting, December 18th, our Christmas party, will be held at the Mitchell Park Pavilion, South Layton Blvd. at 7 o'clock.

SPECIAL ANNOUNCEMENT

With the March issue we are starting a new policy of providing free to the author 50 reprints of major articles published in the Wisconsin Archeologist.

Please insert this page in your Index Issue, Vol. 42. No. 1.

INDEX ADDENDA

New Series

Page

Vol. 30, No. 1 March, 1949

Report on the Outlet Site on Lake Monona 22
A. H. Whiteford

Vol. 32, No. 1 March 1951

A Preliminary Study of the Old Copper Complex 1
Warren L. Wittry

The World Record Relic Hunt 19
Robert G. Lietz

Archeological Notes 21

Vol. 32, No. 2 June, 1951

The Mining and Use of Lead by the Wisconsin Indians 25
Herbert W. Kuhm

The Menominee Indian Sawmill: A Successful Community Project 39
Robert E. Ritzenthaler

Folsomoid Points in Wisconsin 45
Robert E. Ritzenthaler and Paul Scholz

Vol. 32, No. 3 September, 1951

The Reuter Mounds, Milwaukee County 49
Dr. E. G. Bruder

Upper Mississippi Copper Pendants 52
Robert E. Ritzenthaler

Grant County Effigy Mounds 54
Edwin Goke

Goose Effigy Mound at Hustisford 56
Gustave E. Zilisch and Dr. E. G. Bruder

List of Members 58

Vol. 32, No. 4 December, 1951

Notable Indian Burials in Wisconsin 65
Dr. Herbert W. Kuhm

The Clark Mound Group in Dodge County 87
Dr. E. G. Bruder

The Prawatschke Indian Mounds of Dodge County 93
Dr. E. G. Bruder

Archeological Remains in Wyalusing State Park 97
Dr. E. G. Bruder

Folsom Man and Carbon 14 108

Vol. 40, No. 2 June, 1959

Geology of Raddatz Rockshelter Sk5, Wisconsin 83
Paul W. Parmalee

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WISCONSIN
ARCHEOLOGICAL SOCIETY

MARCH, 1962 Vol. 43, No. 1 (New Series)

THE WISCONSIN ARCHEOLOGIST

THE SIGNIFICANCE OF SOME RED OCHRE-LIKE ARTIFACTS FROM LAKE COUNTY, INDIANA, Charles Faulkner 1

TRUNCATED BARB POINTS FROM NORTHEASTERN ILLINOIS, Charles and Harris Palmer 9

COMMENTS ON OLD COPPER CRANIA, Chandler W. Rowe 13

THE AGE OF THE OCONTO SITE, George I. Quimby 16

AN INVESTIGATION OF POSSIBLE CONNECTIONS BETWEEN THE EARLY METAL USING CULTURES OF SIBERIA AND THE OLD COPPER CULTURE, H. M. Wormington 20

OCCURRENCE OF INDIAN MOUNDS IN NORTHERN SAWYER COUNTY, Charles and Harris Palmer 25

INTERESTING WISCONSIN SPECIMENS 26

THE COLLECTOR'S CORNER 27

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Milwaukee, Wisconsin

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For the purpose of advancing the study and preservation of Wisconsin Indian Antiquities.

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THE WISCONSIN ARCHEOLOGIST

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THE SIGNIFICANCE OF SOME RED OCHRE-LIKE ARTIFACTS FROM LAKE COUNTY, INDIANA

Charles Faulkner

During the past three years, several caches of distinctive prehistoric artifacts found in the northern portion of Indiana have been evaluated by the writer to determine what culture group they represent. These assemblages have been found primarily in burial association, and consist of certain recurring artifacts such as numerous ovate-trianguloid cache blades, and copper tools and ornaments, usually rolled copper beads. Caches of these artifacts have been found accidentally by non-professionals several years ago in Marshall, Fulton, and Pulaski Counties, Indiana. Since no written records were kept and few bones were salvaged if a badly deteriorated skeleton was still present, the writer based all comparions on the types of artifacts found in these caches.

The aforementioned artifacts are indicative of a rather broad temporal range from Late Archaic through Early Woodland times. In a preliminary report describing a large cache of ovate-trianguloid blades found in Green Township, Marshall County, a Red Ochre-like culture was hypothesized to be the depositors of these blades (Faulkner, 1960a, p. 96). The author then ventured even farther on that theoretical limb and suggested that a movement of an Early Woodland, Red Ochre-like people up the Illinois and Kankakee Rivers into northern Indiana could explain the presence of this cultural material (Faulkner, 1960a, p. 96).

This position was bolstered somewhat by the location and subsequent examination of a cache of artifacts found with a burial in Pulaski County. These grave goods included seven large corner-removed or stemmed knives made of bluish-grey southern Indiana flint, 320+ ovate-trianguloid cache blades, and numerous rolled copper beads (Faulkner, 1906b, p. 43).

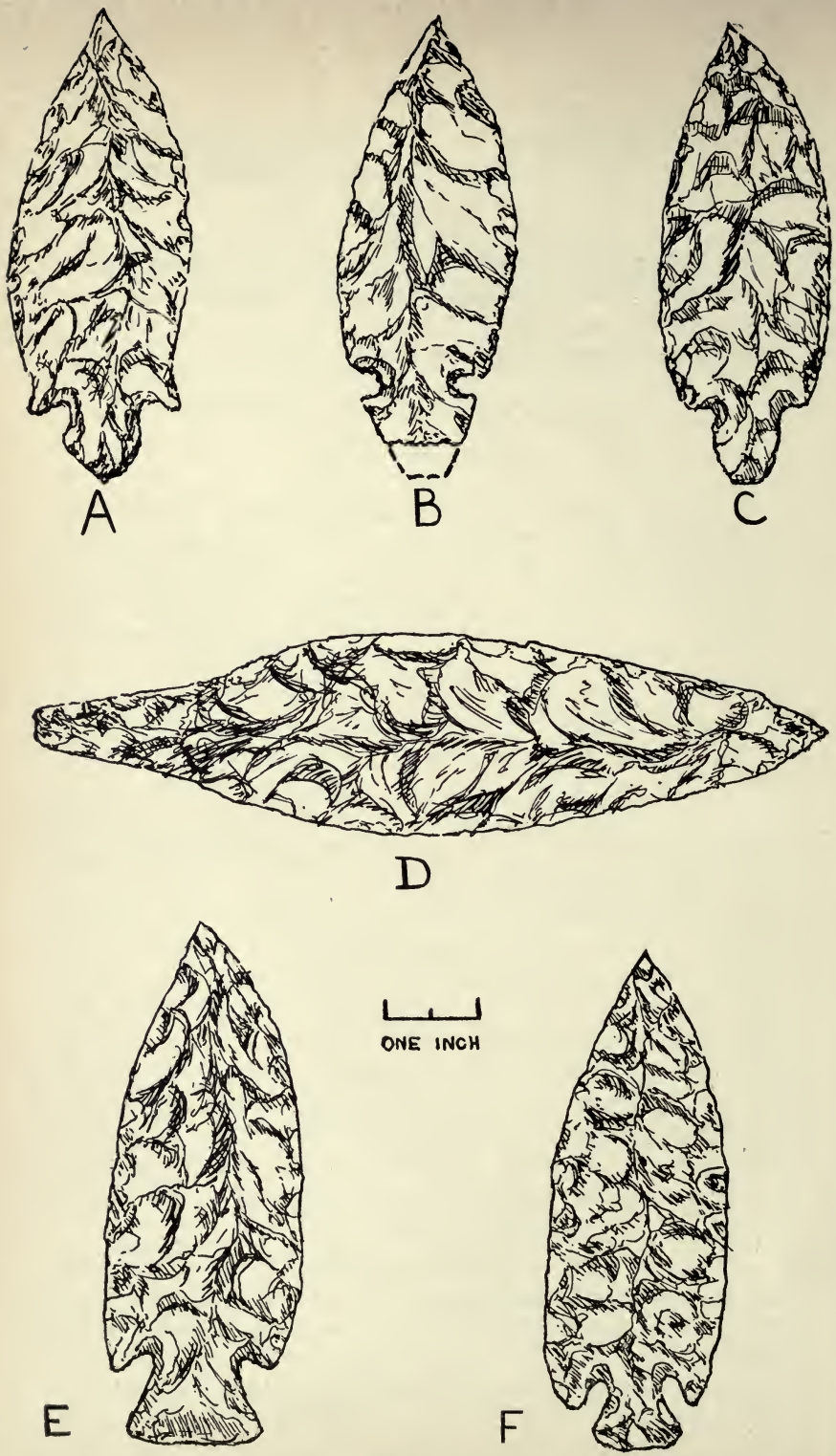

FIGURE 1. Red Ochre-like artifacts found with West Creek Townshop burial A, corner-removed blade; B, wide-notched "turkey-tail"; C, corner-removed or stemmed blade; D, tanged-base knife; E-F, corner-notched blades. Figure 1 drawn by Terry O. Hand.

These artifacts are very similar to the mortuary offerings found in an Ozaukee County, Wisconsin, Red Ochre grave (Ritzenthaler and Niehoff, 1958, pp. 117-119). Wide-notched "turkey-tail" blades chipped from southern Indiana flint, cache blades, and rolled copper beads were included in the mortuary offerings (Ritzenthaler and Niehoff, 1958, pp. 117-119).

Now that additional artifacts had been recognized in the northern Indiana manifestation, more comparisons could be made to similar burials in the upper Great Lakes area. In Bay County, Michigan, the Andrews site demonstrates similarities to our Indiana components because of the presence of ovate-trianguloid cache blades, but it has been designated a Glacial Kame site due to the association of birdstones with red Ochre-covered cremations (personal communication with James B. Griffin, April, 1960, and Townsend, 1959, p. 219).

The closer affinities to Glacial Kame and early Point Peninsula in the Michigan Andrews site suggests that the northern Indiana trait lists might be more Red Ochre-like because they are closer to the Illinois Red Ochre center of influence. This might add weight to the theory that at least some of the Red Ochre material traits diffused northward along the Illinois and Kankakee Rivers into northern Indiana and Southern Michigan, if not some of the culture bearers themselves. Further north in Michigan the Red Ochre traits started blending into the material culture of that region, namely Glacial Kame and early Point Peninsula.

If this theory is correct, burials that show closer relationships to central Illinois Red Ochre mortuary customs should be present along the upper Illinois and lower Kankakee Rivers. In September, 1960, the author was informed of some Red Ochre-like material that had been recovered in Lake County, Indiana, near the Kankakee River.

Two caches of Red Ochre-like material were found in Lake County in the early 1900's, and both caches now repose in the collection of August R. Johnson, Hebron, Indiana. Mr. Johnson graciously allowed the writer to examine these superb artifacts for this report.

One cache was found along the dredged bank of the Kankakee River in 1909. This collection of artifacts consists of 20

double pointed knives made of southern Indiana flint, many exhibiting the classic "turkey-tail" form with the small notches at one end. These artifacts range from 2½ inches to 6¼ inches in length. No skeletal material was reported in association with this cache, nor do the artifacts now show any red ochre stain. Of course 50 years of handling and a recent washing could have obliterated all traces of this "red paint."

These classic "turkey-tail" blades have been found in Red Ochre mounds in central Illinois (Fulton County), and this is a blade type that has been called diagnostic of the central Illinois Valley Red Ochre, or what Wray has tentatively called the Roskamp Focus (Wray, 1952, p. 153).

The other Red Ochre-like cache was unearthed in West Creek Township, Lake County, several miles north of the Kankakee River in 1907. Mr. Hyram Barrett, now deceased, was grading down a portion of a sand hill called Oak Grove with a slip scraper when a burial with a profusion of accompanying artifacts was revealed. Some bone fragments were salvaged and these were apparently stained green from the presence of copper, but these remains are not in Indiana and could not be examined.

The copper artifacts either had disintegrated, or were not picked up at the time of the discovery. Several fine lithic artifacts were recovered, however. There are 20 large knives made from southern Indiana flint that range in size from 4¾ inches to 6 inches and grade in notching from corner-removed or stemmed to wide-notched "turkey-tails" (Fig. 1, A-C). Also in this collection are three or four broken "turkey-tails',. and these specimens have not been washed. This was fortunate, for the unmistakable stain of red ochre was still adhering to the blades. An immediate scrutiny of some of the unbroken artifacts also revealed flecks of this powdered hematite still clinging in depressions.

Approximately 46 ovate-trianguloid cache blades all heavily stained with red ochre were in the Johnson collection and obtained at the same time from Barrett, but there is no record that these blades were found with the same burial. The red ochre stain and the frequency of such cache blades with burials such as this make it probable that they were a part of the Oak Grove burial accompaniments.

Three large corner-notched blades were definitely found with this burial and range in length from 5½ inches to 6½ inches. These are well flaked blades made of a lighter chert medium (Fig. 1, E-F).

By far the most spectacular artifacts found in this grave are four tanged-base knives that are rather uniform in size, being from 8½ to 8¾ inches in length. These are flaked from a light-colored chert, and rank among the finest chert artifacts the writer has seen (Fig. 1, D).

Similar tanged-base knives were discovered in what Quimby called an Old Copper grave near Port Washington in Ozaukee County, Wisconsin (Quimby, 1957, pp. 1-5). At this site, artifacts recovered with a skeleton in 1910 include four tanged-base knives ranging from 26.5cm. to 17.1cm. in length; one similar shaped copper blade 18.4cm. long with a flat tang; a stemmed blade of chipped flint; one copper celt; a grooved ax; 7 elongated ovate knives of chipped quartzite; 13 ovate knives, points, or scrapers (cache blades?); and smaller stemmed and notched projectile points (Quimby, 1957, pp. 1-3).

Quimby later retracts his Old Copper designation (Quimby, 1958, p. 175), and the Red Ochre identification seems certain for the following reasons. The wealth of grave goods accompanying this burial has no parallels at other Old Copper cemeteries. At the classic Old Copper burial sites such as Osceola (Ritzenthaler, 1946, pp. 53-70) and Oconto (Ritzenthaler and Wittry, 1952, pp. 199-223), no individuals were as lavishly endowed with mortuary offerings, especially flint or chert artifacts. The tanged-base blades and ovate knives (cache blades) have definite parallels in the Lake County burial. Caches of flint knives or blades are not an Old Copper trait, but are certainly found in Red Ochre graves.

The time element is the clincher. By comparing the Port Washington burial to a similar one discovered in 1898 in Manitowoc County, Wisconsin (Brown, 1907, p. 60), below the Algoma stage beach level, Quimby maintains that the Manitowoc County burial must be later than 900 B. C. because it is later than the Algoma high water stage which terminated about this time (Quimby, 1958, p. 178). Radiocarbon dates from the Old Copper cemeteries in Wisconsin seem too

early for our Red Ochre-like material. Although no C14 dates have been obtained for a Red Ochre site at the time of this writing, a maximum date for the Andrews site has been established at 700 to 800 B. C. due to its location on a beach deposit that was formed about this time (personal communication with James B. Griffin, April, 1960, and Townsend, 1959, pp. 219-224). This site could, of course, be much later. This date correlates quite well with Quimby's maximum date for the Manitowoc County burial and with the early Point Peninsula Oberlander No. 2 site which has been dated at 998 B. C. + — 170 years (Libby, 1952, p. 77). At the Oberlander No. 2 site, the cremated dead had been supplied with various artifacts including birdstones and mortuary cache blades (Ritchie, 1944, pp. 152-160). Until definite Red Ochre radiocarbon dates are established, a safe guess would place the Great Lakes Red Ochre-like sites sometime between 500 B. C. and 1500 B. C.

The discrepancy of these dates in the light of an Old Copper-like artifact being found in the Red Ochre Port Washington grave can probably be explained as follows. In describing poorly documented gravel pit burials of Wisconsin where artifacts such as copper axes and awls, birdstones, large "ceremonial" flint blades, and the use of red ochre are found in burial association, Wittry and Ritzenthaler state that this shows "the dwindling use of copper by later groups using Old Copper burial customs and at the same time the introduction of new artifact types" (Wittry and Ritzenthaler, 1956, p. 253).

If the writer's theory that a Red Ochre-like cultural pattern diffused northward from the central Illinois center is correct, then the Port Washington burial might possibly represent an amalgamation of Red Ochre-like peoples with a native Wisconsin group still clinging to some late Old Copper traditions The Andrews site near Saginaw Bay might represent a comparable situation in Michigan, only this fusion would be with a Glacial Kame culture. A much earlier radiocarbon date for a classic Red Ochre site in central Illinois (Roskamp Focus) than for an upper Great Lakes site like those in northern Indiana, southern Michigan, and southern Wisconsin, would strongly suggest a south to north diffusion of cultural traits and even a possible migration of people.

Of course the exact opposite could be true; northern Red

Ochre-like sites might be earlier than the Illinois sites, and this might mean a north to south movement. A strong argument for this theory would be that mounds are present in the Illinois manifestation; however, no Red Ochre-like burials have been reported from artificial mounds in the north. The construction of burial tumuli would, of course, be considered a later trait.

Several factors must be supplied before more exact relationships to other groups and a temporal position can be assigned to the northern Indian burial complex. Radiocarbon dates are needed for the central Illinois Red Ochre sites and the Red Ochre-like burials in the upper Great Lakes area. Measurable skeletal material and more Red-Ochre-like artifacts from the upper Illinois and lower Kankakee drainage would also help clarify this problem. With the present-day industrial and suburban expansion in northern Indiana, the latter items might be accidentally discovered any day.

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TRUNCATED BARB POINTS FROM NORTHEASTERN ILLINOIS

Charles and Harris Palmer

It is with considerable interest that we report on a new locality from which truncated barb points have been collected. This rather unexpected occurrence is located in northeastern Illinois about one hundred miles distant from the original locality in Dodge County, Wisconsin described by Ritzenthaler. [1]

More than thirty-five years ago the writers, who at that time were residents of a Chicago suburb, collected rather extensively from the northeastern counties of Illinois. As early as 1925 we recognized the uniqueness of this type of projectile point and kept these specimens together in a separate place in our collection. These points came from along water courses tributary to the upper Illinois River in parts of Cook, Kane, Will and DuPage Counties, and more specifically from along the valleys of the Fox, Desplaines and DuPage Rivers. Our earliest collected specimens, and perhaps more than half of the total, came from along the Fox River, and for this reason we gave them the colloquial name "Fox Valley Points."

By referring to a suitable map, it is easy to see that the Fox River has its origin north of Waukesha, Wisconsin and flows a distance of some 62 miles south of the Illinois line. It then continues to the confluence with the Illinois River at Ottawa, Illinois, a river distance of another 124 miles. The map also reveals that the reported finds in Dodge County, Wisconsin come from an area some 25 miles west of the source of the Fox River, but on the upper reaches of the Rock River system.

The furthest place north on the Fox River that the writers have any recollection of finding this type of point is in the vicinity of the south line of McHenry County, Illinois. The furthest occurrence to the southwest was near the headwaters of the Illinois River formed by the confluence of the Kankakee and Desplaines Rivers in Will County, Illinois. Since each of these areas was located in the outer fringe of our collecting activities, they should not be looked upon as geograph-

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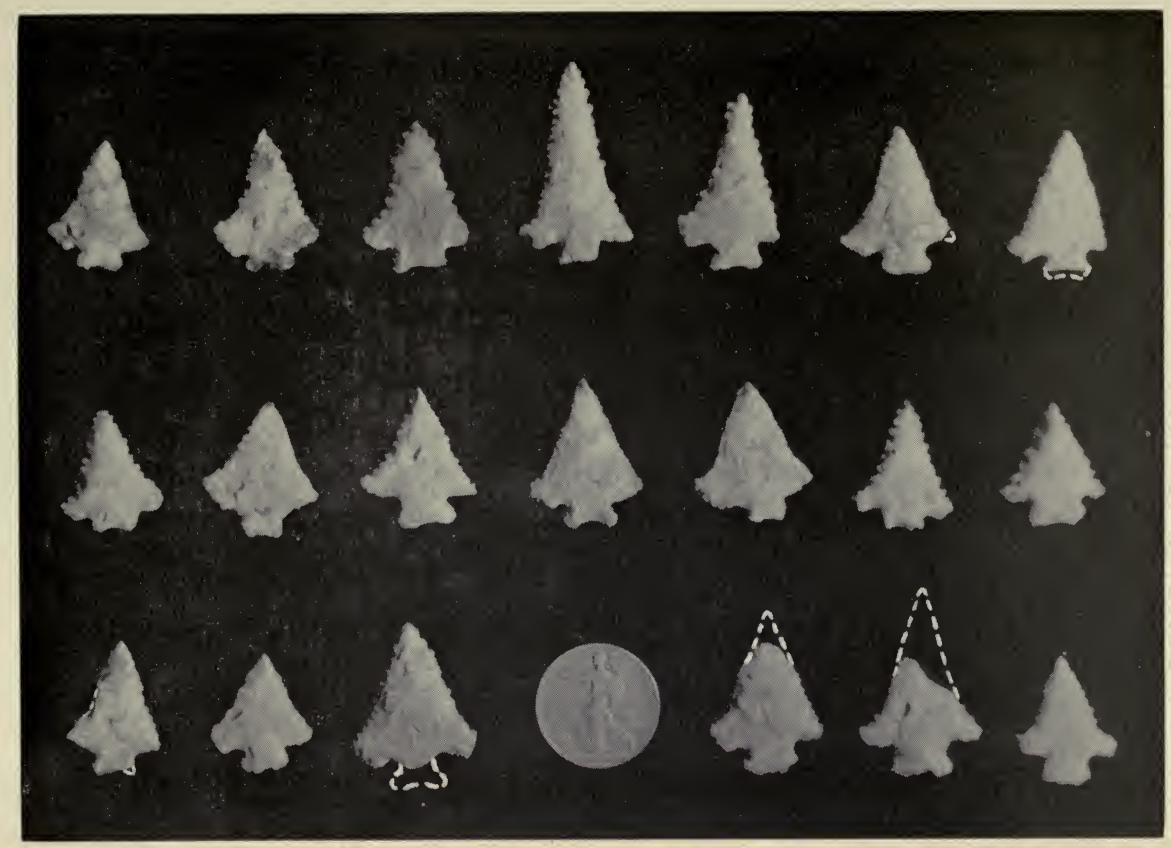
[1] Ritzenthaler, Robert, Truncated Barb Points From Dodge County, The Wisconsin Archeologist, Vol. 42, No. 2, 1961, pp. 90-91.



Charles J. Palmer Collection. Spooner, Wis. Photo by Huth.

ical limits of occurrence. In fact, within the last year a specimen reported as found along the Fox River in southern Wisconsin was added to the writer's collection and is included in the photograph on the adjoining page. The distribution of all known points of this type to date makes it possible to reasonably predict that collectors located along the Fox River in southern Wisconsin and northern Illinois, in response to Dr. Ritzenthaler's plea to re-examine their collections, will be able to fill in the gap between the two known areas of occurrence. Perhaps at this late date of writing this may have been already accomplished in part. Should this prediction be fulfilled, it would seem that we would have a basis for a more appropriate name for this variety of projectile point founded upon a geographical type locality. Recognizing Dr. Ritzenthaler's priority in establishing the type, we would then propose our original name "Fox Valley Point" as being more appropriate than either the term "Truncated Barb Point" or "Clipped Wing Point," as the case may be.

In this connection we would like to elaborate on the original, rather brief description of this artifact, by referring to specimens in the adjoining photograph. Excluding the broken specimens in the bottom row, it can be seen that in its typical form this point is decidedly unsymmetrical with respect to right and left hand barbs. In the majority of cases the left hand barb is exaggerated by projection and truncation and also by a pronounced forward hook, the latter caused by a re-entrant at the junction of the barb with the cutting edge of the blade. These seem to be diagnostic features of the majority of the better made specimens in the three collections described to date. The opposite barb varies from one that is fully pointed to one that is truncated, but, in the majority of the cases, lacking the forward hook.

It is interesting to note that 19 out of 20 points in the writers' collection have slightly concave bases similar to the majority of the known Wisconsin specimens. We assume that the word convex in the original description is a typographical error. The great majority of our Illinois specimens are very thin and 15 out of the 20 are visibly serrated. The median length is 1½ inches and the median width is 1⅛ inches. Nearly all cutting edges are incurvate and some are markedly so.

In our earlier days of collecting we rather naively believed that all these points were the handiwork of a single artisan, a sort of personal trademark, so to speak. Or if not that, the product of a small group or a clan wherein the unusual shape was an expression of totemic significance. As the area of occurrence widened we became inclined to a more utilitarian point of view and we now believe that it is not unlikely that the unusual shape of this artifact is in keeping with its intended use, whatever that may be.

The question of intended use is indeed puzzling and any attempt at answering is, at best, conjecture. We might suggest, for example, that the thin blade, the serrated edge, the weakly developed base and the exaggerated and lopsided barb is reminiscent of a decadent harpoon. Yet if a line was to have been attached for retrieving purposes, better means for fastening could have been easily provided. The unbalanced symmetry of some of these specimens would require close range shooting if accuracy were not to be sacrificed. The thin, serrated blade would be ideal for shooting rough scaled fish, such as the carp or gar, or for penetrating the tough hide of the catfish or sturgeon. It has been the writers' experience, furthermore, that our specimens have all been found very close to rivers as if these points might have been on the fish arrow occasionally used for some other emergency purpose on land. The foregoing conjecture is submitted for what it may be worth and we would like to hear theories proposed by others regarding the use of this type of artifact.

In closing, we would like to thank Mr. Charles Vanerka of LaGrange, Illinois, a collector and friend of long standing, for contributing two perfect specimens of this type to our collection.

ADDENDA:

Mr. Paul Koeppler reports one truncated barb in his collection from the Mud Lake area, Dodge County, Wis.

Mr. Keith Hensel reports three in his collection from Racine County, Wis. — Editor.

COMMENTS ON OLD COPPER CRANIA

Chandler W. Rowe

In 1941 and the early part of 1942, I had occasion, as one of the staff archaelogists with the University of Tennessee, TVA, WPA dam basin salvage project, to study a group of crania from the Archaic cultures of West Tennessee. These people, who lived during an early non-pottery making period, had several physical features in common and appeared to represent a rather homogeneous physical type. Perhaps the first impression which strikes the observer is the massive, rugged quality of the skulls of both the males and females. As is common in most areas, the females are somewhat smaller, but both sexes have broad faces, strong areas of muscle attachment, gonial eversion (a flaring out of the lower jaw at the point of junction of the corpus or body of the lower jaw and the ascending ramus), square orbits, and a tendency toward scaphoidism or a keel-shape to the top of the cranium. Most of the Tennessee crania are longheaded, although a few trend into the range of medium-headed. The suspicion that this group was a homogeneous population as a result of inbreeding is further advanced by the fact that ear exostosis (small nodules of bone growing at the ear opening, sometimes to the extent that the ear opening is almost completely closed) is fairly common as well as incomplete tympanic closure. This last refers to a condition in which the bony ring around the ear opening is horseshoe shaped rather than a completely closed circle of bone. I am not sure that these features are controlled by specific genes and, therefore, represent genetic linkage, but suggest that such might be the case. The tympanic fissure has been noted on forms as ancient as Sinanthropus and so has considerable antiquity. I do not suggest, however, that there is a direct genetic linkage between this particular early Chinese form and the Archaic people of Tennessee. It should be further pointed out that growth of bone in the ear openings and incomplete tympanic closure are not confined to Archaic types, but seem to have a high incidence among these populations.

Similar crania have been reported from the Southeast by Webb (Bulletin of American Ethnology, plates 310 and 311) and from the Northeast by Ritchie (Researches and Transactions of the New York State Archaeological Associations,

Front and profile views of archaic physical type, Oconto Site.

Volume X, No. 1, pp. 156 - 157) from the Frontenac Focus, Archaic pattern.

With these things in mind, it was with considerable interest that I viewed the cranial material from the Old Copper sites of Oconto and Potosi which are in the Milwaukee Public Museum collections. Although the sample which I saw was somewhat small, they generally agreed in conformation and groups of physical characters with the Archaic materials from the southeast and northeast. In fact, the physical traits of all these early people east of the Mississippi are such that I am led to postulate an archaeological period (the non-pottery making Archaic) during which small bands of hunters and gatherers lived in various parts of the eastern United States in rather isolated inbred groups. It may be that these groups, which probably started their occupation in the northern regions, were pushed into the marginal regions by the influx of the pottery making and possibly cultivating peoples of early Woodland times. Since these physical traits are not exhibited in the same combination or proportion in later Indian populations, one is led to assume that either the Archaic types died off, or that these traits were bred out through crossing with the later groups, those with different characteristics which were dominant in any situation of admixture. The only population of which I am aware that has maintained any strong resemblance to what I will call the "classic" Archaic type is found among the northeastern Algonkian, but even here only a few of the traits which characterize the Archaic type are to be found. Northeastern Algonkians tend toward the scaphoid keel, ruggedness and gonial eversion, but not to the degree that is found in the "classic" Archaic. I have had no opportunity to examine a series of Northeastern Algonkian crania and so am unable to comment of such features as ear exostoses or tympanic fissure.

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THE AGE OF THE OCONTO SITE

George I. Quimby

In a recent article on the age of the Old Copper culture, Mason and Mason (1962) have produced convincing arguments in favor of reducing the estimated antiquity of the Old Copper culture, particularly its manifestation at the Oconto site. I admire their methodical approach to the problem and admit the possiblity that their interpretations are correct. But, in order to show how confusing archaeology can become, and for the sheer pleasure of it, I here wish to argue about the age of the Oconto site using essentially the same approach and the same data as Mason and Mason.

First the radiocarbon dating: the Old Copper dates from Osceola (M643), Reigh (M644), and Riverside Cemetery (M658) (Crane and Griffin 1959, p. 182) are measurements of bone. Broecker and Kulp (1956, p. 10) state that charred and uncharred bone should be used only with the greatest caution because it is easily contaminated by the addition of modern carbon, and such contamination is difficult to recognize in charred or uncharred bone because of its extremely porous structure and low carbon content. It is thus possible that the radiocarbon dates for Osceola, Reigh, and Riverside are too young by an unknown interval of time.

According to Broecker and Kulp (1956, p. 10), fresh wood, pure charcoal, and coarse grained shell are most reliable from the standpoint of contamination by intrusion of carbon of another age. Although the Isle Royale date (M371E) is on charcoal, it is not necessarily relevant here because its relationship to the Old Copper culture it not demonstrated. (Copper mining on Isle Royale may be earlier than this date indicates and we know it persisted into much later periods.)

We are now left with the radiocarbon dates of the Oconto site. These dates (C836 and C837, 839) as published by Libby (1954, p. 740) are 5600 + − 600 and 7510 + − 600 years ago. The first measurement was on charred wood and charcoal, both preferred materials for dating. One might argue that, since these measurements were made by black carbon counting, they were subject to radioactive contamination, but had such occurred the dates should have been anomalously younger (Broecker and Kulp 1956, pp. 7-8).

I assume that the Oconto radiocarbon dates are correct and that there is no error other than the statistical error due to the radioactive process. "Were statistical error the only error involved, then virtually all C14 measurements made should be within 3 times the error quoted" (Broecker and Kulp 1956, p. 5). Applying this concept to the larger Oconto date we get 7510 plus or minus 1800 years. Those who believe 7510 years ago is too old a date for Oconto can subtract 1800 years and get a date of 5710 or 3755 B. C. It is interesting and probably fruitful to note that copper is present in the Modoc Rock shelter in Illinois at about 4000 B. C. (Fowler 1959, p. 49).

This review of Old Copper radiocarbon measurements suggests to me that Reigh, Riverside Cemetery and Osceola are too young by an unknown amount and that Oconto dates somewhere between 4000 B. C. and 3000 B. C. This review also suggests we should have more C14 measurements, preferably of wood or charcoal, associated with Old Copper.

I agree with Mason and Mason that the Oconto site is below the level of Lake Nipissing stage. I have thought so since 1953 when I first began to worry about this site in relationship to lake stages. However, I do not know the exact level of the Nipissing stage at Oconto. It is at least 605 feet above modern sea level (see Hough 1953, 1958), but may be higher as Oconto is north of the Nipissing hinge line. The height of the Nipissing Stage level at Oconto is 605 plus x (an unknown increase due to upwarping of the land). Mason and Mason have shown that the Oconto site itself is between 5 and 10 feet beneath the Nipissing level and that the city of Oconto where other Old Copper cultural finds (see Brown 1907, pp. 66-77) have been made is 11 to 16 feet beneath the level of the Nipissing stage. These figures suggest that the Old Copper finds at the Oconto site and the city of Oconto were from loci, not only beneath the waters of the Nipissing stage, but also beneath the waters of the Algoma stage that followed Nipissing.

The Algoma stage had a water plane of 595 feet above modern sea level (Hough 1958). Oconto is north of the Algoma stage hinge line, thus the elevation of the Algoma strand

line at Oconto is 595 feet plus x (an unknown increase in elevation due to upwarping of the land).

The Algoma stage seems to date between 1500 B. C. and 500 or 600 B. C. (Quimby 1960, p. 17). Although the end of the Algoma stage is not certainly dead, it is now reasonable to suppose that it occurred sometime after 1000 B. C. and before 500 B. C. And if the Old Copper finds at the Oconto site and in the city of Oconto have never been under water they must indeed be far more recent than the radiocarbon dates would indicate.

Could the Oconto Old Copper finds have been beneath the waters of the Nipissing and Algoma stages? I don't know! In Louisiana I have seen the excavation of sites that had been many times beneath the flood waters of rivers. Pits, hearths, etc., were still intact, sealed in by riverine deposits. In the upper Great Lake region I have seen sites overridden by beach deposits and sites submerged by a rising water table, but I have not seen sites that can be proven to have been beneath an active lake bottom. However, the western Green Bay water is so shallow and the adjacent shore land slopes so gently to the water that I would not expect to find any noticeable disturbance of buried features.

Goldthwait (1907, p. 96) in considering the shore area between Green Bay and Marinette which includes Oconto, said as follows: "The low swampy lake plain stretches inland for a distance of one to six miles, interrupted by low ridges of sand which are often very faint in expression but remarkably continuous, and by occasional groups of dunes. There was little or no erosion by the extinct lake along this shallow coast, but rather continual deposition in the form of beaches and bars."

Under these conditions, it seems probable to me that the burials at the Oconto site could have withstood the gradual encroachment of rising waters and could have survived the negligible amount of lake bottom erosion that would be expected in the geographical situation at the Oconto site.

At the Oconto site, the burial pits in the gravel layer were "discernible by the gravel outline when approached from above" (Ritzenthaler and Wittry 1952, p. 203). The pits did not show in the overlying sand layer that may have been

waterlaid. The post holes and copper awls found near the top of the sand layer may not be related to the Old Copper occupancy of the site. There are Woodland occupations along the river just west of the Oconto site.

From all of the preceding lines of evidence I would conclude that one can not prove that the Oconto C14 measurements are not correct and that the site was not under the waters of the Nipissing and Algoma stages. If the site were not under the Nipissing and Algoma stage waters, the C14 dates are either incorrect or older wood somehow came to be associated with the Old Copper culture. Some additional investigations at Oconto should settle the questions properly raised by Mason and Mason and the additional uncertainties raised by me.

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AN INVESTIGATION OF POSSIBLE CONNECTIONS BETWEEN THE EARLY METAL USING CULTURES OF SIBERIA AND THE OLD COPPER CULTURE.

H. M. Wormington
Curator of Archaeology
Denver Museum of Natural History

In the course of a trip to Europe during the summer and fall of 1961, the writer had the opportunity of studying Siberian collections in Vienna, in Moscow, and in Leningrad. The purpose of this investigation was to determine whether there might be a link between the Old Copper Culture of the Great Lakes area and the early cultures of Siberia that produced metal artifacts. The work was made possible through a generous grant, from the Milwaukee Public Museum, which was drawn from a fund provided by Mr. Joseph P. Gannon for research relating to the Old Copper Culture.

There has been general agreement among American specialists that Old Copper represented a regional development unconnected with Old World metallurgy. None the less, further investigations seemed warranted, since, according to most anthropological theory, it would seem highly unlikely that a group of Indians from the Upper Great Lakes area, who were not in contact with the main centers of cutural development, who had a hunting and fishing economy, who did not even have a knowledge of ceramics, should be among the earliest fabricators of metal in the world, perhaps even the first. It seemed desirable to check the Siberian evidence to see if there might be any possible basis for error, any indication of some connection between the two areas, since, in a time antedating the use of water craft suitable for oceanic travel, this would appear to be the source from which Old World traits would come.

In Vienna, through the courtesy of Dr. Etta Becker-Donner, the famous Hegner bronze collection in the Museum fur Volkerkunde was examined, but the age and provenience of the bulk of the material from the Soviet Union made it impractical to attempt any correlations with Old Copper material. It was an extremely fortunate circumstance, however, that Dr. Karl Jettmar, author of "The Altai Before The Turks" (1951), was in Vienna at that time, and it was possible to discuss these

problems with him. Within the Soviet Union the writer received excellent cooperation from Siberian specialists and all relevant collections in Moscow and Leningrad were made available for study. Among those who were most helpful and who provided valuable data were George Debets and Valery Alekseev of the Institute of Ethnography in Moscow, Wanda Moshinskaia and Valery Chernetsov of the Archeological Institute in Moscow, Liaa Krizhevskaia and Zoe Abramova of the Archeological Institute in Leningrad, and M. P. Griaznov of the Hermitage Museum. A special note of thanks is due Erna Siebert, of the Leningrad branch of the Institute of Ethnography, for her aid in translation.

One general conclusion was reached. On the basis of all available evidence, it appears that there is no connection between the early chalcolithic or eneolithic cultures of Siberia and the Old Copper Culture of the Upper Great Lake area. All of the Old World specialists who were consulted concur with this opinion, which is in accord with the beliefs of American archaeologists.

The best arguments for independent development of Old Copper are based on chronology, although there are also other lines of evidence. Radiocarbon dates indicate a probable age of 7000 years (circa 5000 B. C.) for some of the Old Copper Indians. (Ritzenthaler, Editor, 1957) Geological evidence also suggests an early date for the beginnings of this culture. (Quimby, 1960) Even if one accepts the dates proposed by Griffin (1960), and disregards the earliest radiocarbon dates and places the earliest Old Copper manifestations at about 3000 B. C., there are still problems relating to chronology.

In the Baikal area, the Glazkovo Stage, during which metal was first used, followed the Neolithic stages. There is a growing tendency to include all of the Baikal Neolithic within the third and second millenium B. C. (Chard, 1961) Even A. P. Okladnikov (1955), who tends to favor a longer chronology, places the beginning of the Glazkovo Stage in the Baikal area at about 1800 B. C. Similarities between Glazkovo artifacts of nephrite and those from China provide support for a date of this general range. (Michael, 1958) If we consider the somewhat older metal cultures found farther to the west in the steppe area, we find that the earliest estimated age of the

Afanasievo Culture is the second half of the third millennium B. C., that is after 2500 B. C., and some believe that it should be placed at the beginning of the second millennium B. C. Farther to the north, in the Lena Basin, the production of metal objects is believed to date from the end of the second millennium B. C. (Okladnikov, 1959).

It might be argued that, since these are estimates unsupported by radiocarbon dates, they may be wrong. It is entirely probable that some changes in chronology will be made as radiocarbon dates become available. The writer is convinced, however, that these dates are of the right order of magnitude, and believes that it is highly improbable that discrepancies will be found which would indicate that the use of metal in Siberia predated Old Copper. Assuming, however, for the sake of argument that this might be the case, it becomes desirable to see if there are any technological and typological similarities between Old Copper and Siberian manifestations of Glazkovo or Afanasievo age that might indicate some connection. Again, all evidence militates against this possibility.

It is of particular importance that techniques of smelting were completely unknown to the Old Copper Indians, while all copper used in Siberia had to be obtained through smelting. Free copper is found only in the Ukraine (Griaznov, personal communication). Cold hammering and annealing were techniques used by both groups, but most of the artifacts produced were quite different. There are some superficial resemblances between non-diagnostic forms, but the distinctive traits that characterize Old Copper assemblages are lacking in the Siberian collections. Curiously enough, the only examples of artifacts that do resemble specific North American types are from the Volga area of European Russia. In a 1901 publication by A. Shtukenberga are pictures of artifacts from Kazan Province that include a copper "spud" that would fit well in an Old Copper collection and socketed spear points that resemble some Old Copper forms. In view of the location of these finds, however, these resemblances must be attributed to convergence.

A summary of finds of copper artifacts attributed to the earliest periods in Siberia will indicate their general nature and relative scantiness. Okladnikov (1955) notes that in the

whole of the Pri-Baikal area only 58 metal artifacts and 34 fragmentary pieces of the earliest metal using period have been recovered. The Angara drainage produced twelve leaf-shaped knives, four small bladed knives, nine fish hooks, five needles, one tube, one drill, several bracelets, and a fragmentary specimen that may be part of a vessel. Lena Valley sites yielded one leaf-shaped knife, two with small blades, two with rectangular blades, three needles, and four tubes. Finds in the Selenga area include three leaf-shaped knives, a knife with a small blade, and a needle.

Even in the steppe area to the west, which produced such an abundance of metal work during the full Bronze age, finds of copper objects attributed to the earliest metal using period were rare. Kiselev (1951) lists the following of Afanasievo age: copper plating (for a wooden vessel?) in Afanasevskii cemetery, three leaf-shaped copper knives and thin copper leaves that were found between two whetstones in Tesinsko cemetery; copper plating from Cydinsk cemetery, thin copper blades from the cemetery of Krasno Iar, and a copper knife and a fragmentary wire head band from a cemetery at the mouth of the Kuiom River in the Altai.

Even if one were to disregard all chronological evidence and argue that some of these unspecialized forms could have been exported from Siberia and have been the simple prototypes from which were derived the more developed types of the Old Copper culture, there would still be difficulties. There is, of course, the lack of evidence of population movement or diffusion in the vast area that lies between eastern Siberia and the Great Lakes. There is also the question of the lack of pottery in Old Copper. By the time metal came into use in Siberia, pottery had already been used for at least a thousand years and perhaps longer, and this trait was firmly integrated in the cultural pattern. It would certainly seem logical that metal fabrication and the making of ceramics would spread together since, in the Siberian area, all copper had to be smelted and the use of pottery was vital for this process. There is even evidence for the way in which it was used, for at a site near Siktiakh, in the Lena Lowlands, a smelter was found that contained the clay vessels in which the metal was

smelted (Okladnikov, 1959).

There were also many elements in the Old Copper complex that were unknown in the eneolithic cultures of Siberia. Among these were bundle burials. Cremations were rare. Chipped stone artifacts were totally different; no points or scrapers that resemble the side-notched types of Old Copper were ever produced in Siberia.

In general, it may be stated that nothing has been found to suggest any possible connection between the early users of copper in Siberia and the Old Copper people of Wisconsin. One can only conclude that the Old Copper Culture is the result of independent invention in America.

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OCCURRENCE OF INDIAN MOUNDS IN NORTHERN SAWYER COUNTY

Charles and Harris Palmer

Six small conical elliptical mounds occur on the Albert Thompson farm in the NE ¼ of the SW ¼ and the NW ¼ of the SE ¼ of Sec. 3 on the north side of the Namekogon River.

These are located opposite a wide, rather attractive stretch of the river about ½ mile below Pac Way Wong Lake, a favorite Wild Rice locality.

Two of these mounds are rather small conicals and are very difficult to locate in the heavy brush and brambles. These are situated side by side, north-south, about 100 yards from the NE shore of Spruce (Mossback) Lake and perhaps 80 yards west of the west edge of the open field. The mounds are approximately 15' x 4' high each.

Two more conspicuous of the group are ellipticals near the west end of the same field overlooking the river, some 1,500 ft. west of the bridge. They are both oriented north-south, and the longest has never been plowed, measuring perhaps 15' x 20' x 3'. The smaller mound to the west has been plowed several times according to Mr. Thompson, who is one of the first farm settlers in the area (89 years old in 1961). Mr. Thompson also stated that a linear type of low earthwork located quite a way east of the elliptical mounds has long since been plowed down. It, too, was oriented north-south and he estimated its length at several hundred feet.

The remaining two conicals are situated in a pine grove back of the small house. These have almost been destroyed by an old root cellar dug into them many years ago.

Mr. Thompson showed me a cache of two boat stones and a paint stone he dug up that were in a decorated pot that went to pieces upon exposure. The paint stone is a much used piece of hematite. One boat stone is rather crude but the other is a perfect specimen having a truncated point. Both are a hard hematitic taconite. These were found about 200' north of the river and 100' west of the town road.

Interesting Wisconsin Specimens

TUBE PIPE

(Left)

Found in a Red Ochre burial at Menominee, Michigan. Of Ohio steatite. Length ca. 8 inches. Ross Williams Collection, Menominee.

UNFINISHED COPPER SPEAR POINT

(Right)

Showing notches preparatory to folding the tang to form a socket. Marinette County. James Weida Collection.

TINY GROOVED AX

(Left)

A typical grooved ax except for its small size. Length 1⅜ inches. Two Rivers area, Manitowoc County. M. S. Thomson Collection, Sheboygan.

POLISHED-STONE PENDANT

(Right)

Of Ohio steatite. Fond du Lac County. M. S. Thomson Collection, Sheboygan.

We are happy to welcome the following new members of the Wisconsin Archeological Society:

Milton F. Hulburt, Box 35, Reedsburg, Wis.

Cudahy Public Library, 4665 S. Packard Ave., Cudahy, Wis.

Dr. Robert A. Black, University of Wisconsin, Dept. of Anthropology, Milwaukee, Wis.

Robert D. Hucek, 1303 Steele, Algoma, Wis.

Octave J. DuTemple, 15 W 306 Plainfield Rd., Hinsdale, Ill.

John Thielen, 6951 Douglas Ave., Racine, Wis.

Sylvester R. Towle, 7528 — 31st Ave., Kenosha, Wis.

Miss Joyce Scholz, 3033 S. 39th St., Milwaukee, 15, Wis.

Paul Munninghoff, Route 1, Rhinelander, Wis.

Bernard Brown, 611 N. Broadway, Milwaukee 2, Wis.

Donald E. Steffen, Nocquebay Ave., Pestigo, Wis.

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Mrs. Walter Hebeler, 1302 N. 63rd St., Wauwatosa, Wis.

Robert L. Hastings, 7910 — 7th Ave., Kenosha, Wis.

Edward J. Foley, 5349 — North Bay Ridge Ave., Milwaukee 17, Wis.

William B. Roosa, Miami University, Dept. of Anthropology. Oxford, Ohio.

Fae E. Stick, 2402½ E. 16th St., Muncie, Indiana

Dennis Hruska, c/o Co-op Store, Chassell, Mich.

Tommy Hester, Box 42, Carrizo Springs, Texas.

James A. Brown, 202 E. Washington, Lombard, Illinois.

Robert F. Euler, Motor Road, Box 121, Pine Beach, N. J.

Our membership now totals 512.

* * * *

Word has been received that Dr. Stephen Borhegyi, Dr. Robert Ritzenthaler and Lee Parsons have arrived safely in Guatemala and have started the excavation of an early Mayan Site about 50 miles south of Guatemala City.

To date the dig has uncovered obsidian artifacts and pottery sherds. The site is on a coffee plantation and the digging must be done in the eight foot space between the rows of coffee bushes causing some difficulty.

Lee Parsons is busy mapping two large mounds about sixty feet in height which have not been previously recorded.

* * * *

At the regular monthly meeting of the Wisconsin Archeological Society on January 15th, Dr. Melville Jacobs of the University of Wisconsin in Milwaukee gave a lecture on the Pacific Northwest Indians. Dr. Jacobs is on the Staff of the University of Washington and he is in Milwaukee for the 1961-62 school year taking over for Dr. Victor Barnouw who is at present at Washington University in St. Louis, Missouri.

Dr. Jacobs specializes in the languages, oral literatures and cultures of the numerous tribal groups of the Pacific Northwest States. As most of the old ways of life are rapidly changing, Dr. Jacobs explained the manner of, and difficulty in obtaining information from the few who have retained a knowlege of the past. It was stated that very little has been done on the archeology of the Pacific Northwest, except by a few individuals, and that it is a fertile field for further investigation.

Dr. Jacob's lecture was extremely interesting and very well received by our members.

* * * *

Dr. Robert A. Black of the University of Wisconsin, Milwaukee, will speak at the February meeting on February 19th. His topic will be "The Hopi Indians."

Dr. Moreau S. Maxwell, the Curator of Anthropology at Michigan State University, East Lansing, Michigan will speak at our March Meeting, March 19th. His lecture will be "Archaeological Investigations at Old Fort Michilimackinac."

* * * *

Just a reminder: Our meetings are held the third Monday of every month (with the exception of June, July and August) at the Atkinson Public Library on North 19th Street, just north of Capitol Drive, at 8 P. M.

* * * *

Dr. Arthur Niehoff is back in the city after an extended

stay in Laos. He will be teaching the Spring Semester at the University of Wisconsin in Milwaukee.

* * * *

We have a few identification cards on hand (four inches by eight and one-half inches) with the name in bold print, The WISCONSIN ARCHEOLOGICAL SOCIETY printed thereon. They are to be used in the window of your car when 'hunting' to identify yourself. They sell at 15 cents each—coins or stamps acceptable—and may be purchased from the Secretary.

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THE WISCONSIN ARCHEOLOGIST

RADIOMETRIC ANALYSIS OF BONE MATERIAL FROM THE OCONTO SITE, Lewis R. Binford 31

EFFIGY MOUND BURIAL AT BIG BEND, WAUKESHA COUNTY, Martin T. Mayer 42

A REVIEW OF CALHOUN COUNTY, ILLINOIS, PREHISTORY, Gregory Perino 44

A WOODLAND SITE IN CANADA, Charles Cochran 52

BOOK REVIEW, Susanne de Borhegyi 54

INTERESTING WISCONSIN SPECIMENS 56

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Milwaukee, Wisconsin

Incorporated, 1906

For the purpose of advancing the study and preservation of Wisconsin Indian Antiquities

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RADIOMETRIC ANALYSIS OF BONE MATERIAL FROM THE OCONTO SITE

Lewis R. Binford

INTRODUCTION

In a recent article Mason and Mason (1961) have discussed the age of the Old Copper culture. A crucial point in their discussion hinges on whether or not the carbon-fourteen dates derived from the Oconto site can be accepted as reliable estimates of the age of the Old Copper materials. Of particular importance is the question of whether or not the burials from the Oconto site had been covered by lake waters after their interment. It is hoped that this report will contribute information pertinent to the solution of this problem as well as serve as an example of the utility of radiometric analysis in the interpretation of archaeological remains.

DESCRIPTION OF THE TECHNIQUE

Radiometric analysis is simply the measurement and analysis of the levels of radioactivity exhibited by archaeological specimens. The theory behind the interpretation of radiometric data has been stated by Oakley (1958).

> "Buried bones and teeth absorb uranium from percolating ground water so that with the passage of time there is an increase in their radioactivity . . . (however) . . . the uranium content of a fossil bone depends not only on the length of time that it has been buried, but also on the permeability of the matrix, on the hydrological conditions at the site and on the uranium content of the water coming into contact with the specimen."

Since Oakley's initial investigation of this technique, over two years of radiometric research has been conducted at the Museum of Anthropology, University of Michigan; under the sponsorship of the Michigan Memorial Phoenix project. This research has made it possible to refine the technique and to know in greater detail the variables which affect the acquisition of uranium by archaeological specimens.

I. **Premise** — Buried bones and teeth acquire uranium and thorium salts from percolating ground water.

A. **Present understanding of the processes involved in the acquisition of radioactive salts**

(1) Experiments by Neumann et al. (1949) indicate that calcium ions are replaced in the hydroxyapatite of bone by uranium ions when bone is placed in a solution of uranium salts. This research was further substantiated by Cook (1951), who found a free exchange of ions between the inorganic constituents of bone and chemical environments. When radioactive particles are acquired through ionic exchanges they are said to be absorbed.

(2) Uranium nitrate, in the form of precipitate, has been observed on fossil bone. Radioactive particles acquired by bone specimens through processes of surface precipitation are said to be absorbed by the specimen.

B. **The variables that may affect the intensity, as well as the rates of acquisition of radioactive particles by fossil bone.**

(1) **Chemical and physical properties of the bone itself.**

a. Neumann et al. (1949) have observed that ashed bone absorbed uranium at a greater rate than did fresh bone. The fact that the relative organic content of bone affects the rates of absorption has been substantiated by Binford.

b. Oakley (1955) observed that the enamel and dentine of single fossil teeth exhibit different radioactive levels.

c. Binford (N. D., a) observed that the relative density and porosity of bone was a factor influencing the magnitude of acquired radioactive particles. Because of the decomposition of inorganic constituents of bone through the action of acids, etc., the properties affect-

ing the levels of acquisition may change through the life of a buried bone.

d. Binford (N. D., a) observed that the differences in density and porosity (and possibly chemical composition) between bones from different species is sufficient to result in differential rates of acquisition.

C. **Factors affecting the availability of radioactive particles for acquisition.**

(1) Permeability of the matrix in which the specimen is buried.

a. Oakley (1955) observed that bones from limestone and clay deposits show consistently less radiation than bones of similar age from deposits of gravel and sands.

(2) The hydrological history of the matrix in which the specimen is buried.

a. Binford (N. D., b) observed that bone buried in a matrix of clear quartz sand does not acquire radioactive particles at a very rapid rate. Specimens in a similar matrix but submerged under a large body of water acquire radioactive particles at a much more rapid rate.

b. Binford (N. D., b) observed that climatic changes which result in fluctuation in the amounts of run-off and other changes in the regional hydrology can result in different levels of radioactivity being exhibited to specimens exposed differentially to these events.

(3) The relative level and constancy of uranium concentration in ground water.

a. It is proposed that erosion, for instance, makes uranium deposits more or less effective in contributing particles to ground water.

(4) Length of time exposed to a given environment.

a. It has been observed by Oakley, Binford and other investigators that "other things being constant" the level of radiation emitted by a

given bone specimen is a function of the length of time that it has been exposed to a given environment.

Working with the above outline as a basis for interpretation we may turn our attention to the materials from the Oconto site. The site is characterized by the presence of three major soil zones, a humus of recent derivation, a thin mantel of quartz sand and an underlying gravel (Ritzenthaler and Wittry, 1953; 201). The burials in question were made after at least partial accumulation of the sand mantel, thus we can assume as constant the relative permeability of the matrix for all of the burials from the site. Since the matrix is quartz sand it is expected that the burials would not acquire amounts of radioactive salts sufficient to result in appreciable radioactivity unless the burials had been submerged under lake waters during part of their history at the site. Differential erosion in the local area would not appear to be a major factor affecting the amounts of radioactive salt available for acquisition. The absence of precipitates on the bone suggests that all the specimens from the site would have acquired radioactivity through the process of absorption. Given these general controls with regard to the environment the specimens at the Oconto site we would expect that if the chemical and physical properties of the bones themselves could be controlled that the levels of radioactivity would be (1) rather low, .50-1.5 counts per minute for dense bone, if the burials had never been submerged, and (2) all burials would exhibit the same general level of radioactivity unless there were more than one period of interment which was separated by an appreciable period of time. It was reasoned that by elucidating these alternatives we could contribute to the solution of the problems of the validity of the Oconto carbon-fourteen dates, and hence the dating of the Old Copper materials in Wisconsin.

DESCRIPTION OF THE SAMPLE

In the spring of 1961 thirty one bone specimens from seven different burials at the Oconto site were submitted by Dr. Robert Ritzenthaler of the Milwaukee Public Museum, for radioactive analysis at the University of Michigan. The

specimens were as follows:

I. Human bone Burial No. 1, Feature No. 6, Area I, Associated with copper.
Specimens: M9-1 Radius; M9-2 Femur; M9-3 Humerus; M9-4 Humerus; M9-5 Fibula; M9-6 Radial condyle; M9-7 clavical.

II. Human bone from Flexed burial, Feature 15, Area I.
Specimens: M9-8 calcaneum; M9-9 rib; M9-10 rib; M-9-11 vertebra.

III. Human bone from extended burial Feature No. 4, Area I.
Specimens: M9-12 radius; M9-13 radius; M9-14 humerus; M9-15 femur.

IV. Human bone cremated, Feature No. 18, Area I.
Specimens: M9-16 skull fragments, M9-17 skull fragments; M9-18 long bone.

V. Human bone from bundle Feature No. 22, Area I.
Specimens: M9-19 femur; M9-20 femur; M9-21 humerus; M9-22 fibula; M9-23 radius.

VI. Human bone from Burial No. 1, Feature No. 1, Area II. **Specimens:** M9-24 rib; M9-25 rib.

VII. Human bone from Burial No. 2, Feature No. 1, Area II. **Specimens:** M9-26 clavical, M9-27 radial condyle; M9-28 skull fragments; M9-29 femural condyle; M9-30 rib; M9-31 radius.

Unfortunately, the sample was heterogeneous with regard to both ashed and unashed bone as well as in the particular bone submitted from the several burials, therefore making it likely that bones of different densities will exhibit differential levels of radio-activity as a result of differential rates of absorption. This lack of control in the constitution of the sample reduces the likelihood of being able to interpret the observable differences in emitted beta radiation in historical terms. In view of the lack of homogeneity of the sample with regard to the physical and chemical properties of the bone the specimens have been groups into three main categories: compact bone, spongy bone, and burned bone. Included in the class of compact specimens are the femur, humerus, fibula, and skull fragments. The spongy bone category is composed of all

condyles, clavicle, calcaneum, ribs and vertebra. Burned bone has not been separated into the compact and spongy subcategories. The results of measurements of beta emissions are presented in Table One. All entries are in beta counts per minute.

TABLE ONE

Feature	Specimen Number	Beta Emisions per/min. Compact	Spongy	Burned
I.				
Burial No. 1	M9- 1	1.21		
Feature No. 6	M9- 2	.74		
Area I.	M9- 3	.52		
	M9- 4	.69		
	M9- 5	.91		
	M9- 6		1.94	
	M9- 7	.62		
II.				
Feature No. 15	M9- 8		5.01	
	M9- 9		2.17	
	M9-10		1.19	
	M9-11		4.38	
III.				
Feature No. 4	M9-12	.87		
Area I.	M9-13	1.48		
	M9-14	.43		
	M9-15	.47		
IV.				
Cremation	M9-16			2.49
Feature No. 18	M9-17			2.81
Area I.	M9-18			2.34
V.				
Feature No. 22	M9-19	.60		
Area I.	M9-20	.86		
	M9-21	.53		
	M9-22	.73		
	M9-23	.64		
VI.				
Burial No. 1	M9-24		1.46	
Feature No. 1	M9-25		1.24	
Area II.				
VII.				
Burial No. 2	M9-26		2.95	
Feature No. 1	M9-27		2.18	
Area II.	M9-28	3.16		
	M9-29		5.60	
	M9-30		3.31	
	M9-31	1.96		

Analysis of the Sample

Since the difference in the physical properties of compact versus spongy bone are believed to influence the relative rates of acquisition or radioactive salts, the first phase of the analysis is to determine if in fact there are real differences ex-

hibited by these two classes of material. If such differences can be demonstrated, then the possibility of interpreting observed differences between burials represented exclusively by one class of bone as opposed by another will be obviated. In order to determine if in fact the heterogeneity of the sample is a contributing factor to the observed differences in beta emission an analysis of the within and between sample variance for the two classes of bone from the site was made. This analysis is concerned with determining whether or not the variation in beta count observed among the specimens of the compact and the spongy bone classes is less than the variation between the two classes taken as units. If it can be shown that the variation between classes exceeds the variation within classes by an amount that has a very low probability of arising simply as a result of random sampling error then we are justified in asserting that there are real differences between the two classes with regard to levels of exhibited radiation. Table Two presents the necessary mathematical information for the calculation of the within and between sample variance.

TABLE TWO

Data	Compact bone sample	Spongy bone Sample
Sn	17.0	11.0
Sx	16.42 c/m	31.43 c/m
Sx^2	23.47	113.61
$(Sx)^2$	269.62	987.85
Mean (x)	.97 c/m	2.86 c/m

The analysis of variance resulted in an (f) value of 36.58 which exceeded the expected value for the appropriate degrees of freedom at the 1% level of probability. Judging from this, we are justified in asserting that there are in fact real differences in magnitude of radiation exhibited by the two classes of bone specimen from the site. This difference is interpreted as reflecting differential rates of absorption being primarily a function of differing bone densities between the two classes of bone specimen. These findings obviate the possibility of offering historical explanations for observing differences between burials which are exclusively represented by specimens of different classes of bone. This is not to say that there may not in fact be historical differences between such burials only that part of the observable difference may not be a function of

different lengths of interment, etc. If such historical differences exist they cannot be demonstrated, for they would be contributing concurrently with differences arising as a result of the differing physical properties of the bone, therefore making their recognition impossible given our present techniques of analysis.

The next step in analysis is to determine whether or not there are real differences between the magnitudes of radiation exhibited by burials represented by specimens of a single class of bone. Inspection of Table One shows that we can justifiably compare Burials No. 1 Feature No. 6, Feature No. 4, Feature No. 22 and Burial No. 2 Feature No. 1. Table Three presents the data necessary for the caluculation of (f) values through the analysis of within and between sample variance.

TABLE THREE

Data	Burial 1 Feature 6 Area I.	Feature 4 Area I.	Feature 22 Area I.	Burial 2 Feature 1 Area II.
Sn	6.0	4.0	5.0	2.0
Sx	4.69	3.25	3.36	5.12
Sx^2	3.97	3.35	2.32	13.83
$(Sx)^2$	21.99	10.56	11.29	26.21
Mean (x)	.78 c/m	.81 c/m	.67 c/m	2.56 c/m

The analysis of within and between sample variance yielded an (f) value of 13.86 which exceeds the expected value for the appropriate degrees of freedom at the 1% level of probability. Inspection of Table Three shows that the mean beta counts for the several burials are tightly clustered with the single exception of Burial No. 2, Feature No. 1. This burial was eliminated from the comparison and the within and between sample variance was recalculated. The resulting value of (f) was .44 which would be expected to occur as often as sixty times in a hundred samples drawn from a single population simply as a result of sampling vagaries. From this we can conclude that burials listed as I, III, and V in Table One are homogeneous and exhibit no real differences that can be attributed to different historical factors. There are two alternative interpretations with the real and observable difference between Burial No. 2, Feature No. 1, Area II: (1) this burial is older than the others in the comparative series, and (2) the small size of the sample composed of skull fragments and a

fragment of radius as compared to larger samples composed of primarily long bone fragments have combined sampling errors with differential absorption rates to produce the observed difference. The latter hypothesis is beyond testing at the present time since the samples have been destroyed and comparative measurements of bone density are therefore impossible to carry out. Since there is no objective reason for assuming that historical factors are contributing to the observed difference the latter hypothesis must be preferred.

Those burials from which only spongy bone was measured show a general similarity with each other; however, the range of variation within the spongy bone series is much greater than in the compact bone series suggesting that minor differences in bone density within the spongy bone class are affecting the relative levels of the specimens. For this reason these samples do not seem reliable for comparative purposes. The single specimen of ashed bone is internally consistent, exhibiting very little internal variation. It is certainly outside of the range of radiation exhibited by the compact bone specimens; however, on the basis of available information this difference must be attributed to differential rates of absorption characterizing ashed as opposed to unashed bone.

Conclusions

Since the sampling requirements of a homogeneous sample with regard to bone density were not met, the explanations of the observed differences between burials can all be made with regard to demonstrable differences in the physical and chemical properties of the bone specimens themselves, therefore obviating the likelihood of historical factors having contributed to the observed differences. We must then conclude, judging from the available data, that there is no basis for the suggestion that the burials sampled represent more than a single component or burial episode at the site. This does not mean that given a more controlled sample such a situation may not be recognized.

With regard to the other major question which this analysis was designed to elucidate, whether or not any of the burials had been submerged under lake waters for any extended period of time. the answer seems fairly clear. Judging from other

sites in the Great Lakes where the matrix was identical to Oconto (quartz sand), and where there were independent means of determining whether or not burials had been submerged (Binford, N. D., b) none of the sampled Oconto burials have ever been submerged for any appreciable period of time. At the Andrews site near Saginaw, Michigan, two burial components were recovered. The earlier component, carbon dated at 5200 B. P., had been submerged under the Nipissing waters judging from their elevations of 593 feet above sea level. The later component at roughly the same elevation was carbon dated at 3170, 300 years B. P. The former burials exhibited a mean beta count of 14.11 counts per minute while the later burials exhibited a mean count of only .61 counts per minute. If the Oconto burials had been submerged, I would expect them to exhibit levels of approximately 14.00 counts per minute, whereas they exhibit mean beta counts of approximately .97 counts per minute for compact bone. This is certainly much nearer the count exhibited by the post Nipissing burials than the pre-Nipissing burials at the Andrews site. These observations are cited in support of the argument advanced by Mason and Mason (1961) that the burials at the Oconto site had not been submerged under the Nipissing waters and, therefore, should have been interred sometime after the Nipissing high water stage and, hence, not earlier than 3500 to 5000 years ago (Mason and Mason, 1961, p. 147). These finding are in accord with the suggestion that the carbon-fourteen age determinations for the Oconto burials are much too early.

Although relatively inconclusive with regard to one of the problems which the analysis could have elucidated, it is my hope that this presentation will serve as an example of the types of problems which radiometric analysis can profitably handle and to introduce the general framework to the archaeological public.

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EFFIGY MOUND BURIAL AT BIG BEND, WAUKESHA COUNTY

Group II

Martin T. Mayer

The mound excavated is part of the group reported by Charles E. Brown in 1906. The mounds are located in Waukesha County (North Vernon Township), range 19 East, NE ¼, SE ¼, and SW¼ of Section 25. The Maney farm, on which they are located, is 2 miles South of Big Bend.

This mound is one of a number of linear and effigy mounds located on a high hill just east of the Fox River. The mound measures 56.6 feet in length, 15.3 feet in width, and 1.6 feet in height.

The longitudinal axis of the mound lies in the magnetic direction W 82° E. A 5-foot trench was cut down the longitudinal axis of the mound. Robert Sturtzen, who has worked with Lee Parsons at Lizard Mound State Park, did the layout, and three other University of Wisconsin - Milwaukee students: Mary Lou Riedy, Ilga Cakans, and I began digging. We cut through the fill, sandy loose clay, finding 5 unworked flint chips and some sandstone. In cutting the trench down to the rocky subsoil, we had uncovered parts of 3 humus lines.

Most of the bottom of the trench was composed of rocky subsoil, but some parts of the trench seemed to be lacking rocks. Ilga was working on the west end of the trench one afternoon when she called Bob and showed him a spot which appeared to be less rocky. He dug out one shallow shovel-full of ground and Ilga spotted a bone. That bone was the left femur of an Indian woman, age approximately 50 years, who had been buried on her right side in a tightly flexed position. We spent the next few days carefully removing the remaining soil from around the burial with grapefruit knives, dental tools, and brushes. We had hoped to find something in the mound — an artifact, fire pit, or perhaps a burial. As it turned out, we found only the burial. The burial was 2.9 feet in length and 1.3 feet wide. The skull was 2.4 feet below the surface and the left femur was 2.75 feet below the surface of the mound. The burial was 0.3 feet north of the longitudinal axis and 17.5 feet from the west end of the mound. Although the mounds are located on a high hill, the soil was quite damp. The skull and hips were partially crushed by the fill of the

mound and, therefore, distorted. The epiphyses of the long bones were for the most part eroded away. The parts of the bones for all parts of the burial, except for the right foot, were recovered. The burial was interred in a pit dug into the sandstone bedrock.

As soon as the discovery was made, we notified Dr. Howard of UW-M, and Dr. Ritzenthaler and Lee Parsons of the Milwaukee Public Museum. They were kind enough to come out to the mound and survey the burial. But before they came we were visited by an unknown and destructive person, or persons.

On the third day after our discovery, we returned to our burial, which was quite well exposed by this time, to find a portion of the skull removed. We are indebted to Mrs. Maney for its recovery. That day we began to pack the bones into boxes. Within two days we had the entire burial removed. Dr. Ritzenthaler, who had loaned us the equipment with which to dig, offered us the facilities of the Milwaukee Public Museum for cleaning and preserving the burial. The skeletal remains are now on exhibit in the Waukesha County Historical Society Museum. Due to the arrangement by which we excavated the mound, Mr. Maney, the owner of the farm, was the recipient of any finds. He felt that he could do the most good by donating it to the Waukesha County Historical Society Museum.

Two weeks after we uncovered our burial, workmen digging a basement on a hill approximately ½ mile west of our burial uncovered a multiple burial, which was intrusive in part of a turtle effigy. Three individuals were removed from the excavation and are now part of the Milwaukee Public Museum's study collection.

We are indebted to the Milwaukee Public Museum for the loan of its tools, facilities, and their much needed advice on cleaning, preservation, and the dating of the burial.

A REVIEW OF CALHOUN COUNTY, ILLINOIS, PREHISTORY

Gregory Perino

Calhoun County is a narrow peninsula bordered on the east and west respectively by the Illinois and Mississippi rivers which converge at the southern end of the county. St. Louis lies some 25 miles to the south of the lower end of the county.

Numerous fluted projectile points have been recovered as surface finds in Calhoun County, attesting to a definite Paleo-Indian occupation. Nothing resembling a Paleo-Indian "site" has been thus far recognized there.

On the high ridges back from the major river valleys local collectors find quantities of Hardin Barbed, Thebes Diagonal-Notched, Sedalia, and large "dovetail" projectile points. An occasional Dalton type is also found, as are others with a general outline of the Agate Basin type. Howard Winters of the Illinois State Museum, currently completing a detailed study of Archaic projectile point distribution, has noted the variety of **southern** types appearing in the lower Illinois and adjacent Mississippi valley region, i. e. in Calhoun County (personal communication).

Point types that appear to be associated with the late Archaic horizon in Calhoun County and surrounding area occur for the most part in the main valleys and along the bluff crests immediately adjacent to them. These include Godar Side-Notched, Etley Barbed, Karnak Stemmed, and Kampsville Barbed types.

A brief survey of the high ridge land lying between the Illinois and Mississippi valleys discloses, along with the Hardin, Thebes, etc. points, numerous early to middle Archaic workshops and habitation sites characterized by a light scatter of chipping debris, a variety of heavy percussion-flaked tools including choppers, shredders, gouges, 4 large free flakes with one or more edges retouched for use as scrapers or knives. Grooved axes occur but rarely, and their association with the above assemblage is not assured. The same is true of hematite plummets. Bannerstones are confined for the most part to the major valleys, and are found along the terraces and talus slope at the bluff edge, and occassionally in ridge-top fields bordering the valley.

The chert found on these Archaic sites is without exception

of local derivation, as is that utilized during Late Woodland times in this locality. By contrast, the intervening Hopewellian occupation discloses use of cherts imported from southern Illinois and neighboring states.

Unreported Archaic Burial Components In Calhoun County

One of the most important, though least documented, aspects of Calhoun County prehistory are the many Archaic burial manifestations that have been excavated, mainly by amateurs, over the years.

Among the many spectacular finds attributable to a Late Archaic horizon in this locality, that of Mr. Al Godar in 1941, stands out in particular. At the foot of the bluffs, 2 miles north of Hardin in the Illinois Valley, he found what appears to have been a single, large burial pit containing 400 projectile points, 40 T-shaped drills, 25 grooved axes, 24 bannerstones, 6 drilled plummets (cf. Perino, 1961), 3 oval-shaped pebble

Hardin Barbed Type. Lower Illinois Valley (Pike County).

LEFT: Unnotched blade like those found in Calhoun County burial sites assigned to the Titterington Focus. RIGHT: Etley Barbed, Calhoun County, Illinois.

pendants, and 3 small, rhyolite beads. This find was briefly reported by Dr. P. F. Titterington (1950). A convex-sided projectile point form, 2½ to 3 inches in length, unnotched and side-notched, was the dominant type among the many points removed from this feature. These have been given the type designation of Godar Side-notched. The bulk of the Godar site artifacts are now in the collections of the Thomas Gilcrease Foundation, Tulsa, Oklahoma.

Titterington (1950) also describes the discovery of 2 bannerstones, 3 large projectile points, and a copper awl by fishermen beneath a limestone slab near the river bank at Kampsville, also in the Illinois Valley and not far from the Godar site.

In 1942 Walter Wadlow excavated a small earth mound on the bluff crest overlooking the Illinois Valley just south of the Godar site. Here, further evidence of an extensive Late Archaic burial complex in this region just north of St. Louis came to light. The mound was located on the "Etley" farm (Misspelled in this manner by Titterington; actually "Oettle"), several extended, primary interments were found placed in radial fashion, i. e heads close together with the skeletons fanned out to form a rough circle. Upright limestone slabs had

LEFT: Karnak Stemmed. Snyders Site, Calhoun County, Illinois. RIGHT: "Dove tail" type. Typical of those occurring in the lower Illinois Valley.

Kampsville Barbed type. All examples taken from the Snyders site, Calhoun County, Illinois.

LEFT: Agate Basin type. Lower Illinois Valley (Jersey County). RIGHT: Thebes Diagonal-Notched.

been placed at the shoulders. with additional slabs laid horizontally over these, thus covering the head and upper torso. Artifacts placed about the head and shoulders included 75 large, unnotched blades (the largest was 13 inches long), 13 projectile points subsequently defined as the "Etley Barbed" type, 25 three-quarter grooved axes, 3 bannerstones, a long copper awl, and 3 small copper axes. Red ochre had been sprinkled over the burials (Wadlow, personal communication). These artifacts are owned by the Thomas Gilcrease Foundation.

Along the Mississippi River side of Calhoun County, on the Webster Farm just south of the town of Hamburg, a similar burial was discovered in 1945. In the process of cultivating a field high on the bluffs overlooking the flood plain, a farmer's plow struck a limestone slab beneath which were found 60 unnotched blades, 4 very large Etley Barbed points, 14 additional points perhaps of the same type, and 9 three-quarter grooved axes. One of the axes was made of hematite.

The Klunk mound group, representing an Archaic, Hopewellian and Jersey Bluff burial site, is situated on the bluff crest overlooking the Illinois Valley at Kampsville. During excavation of Mound 14 of this group, a large, irregular pit excavated into the subsoil was discovered. It had been excavated prior to construction of the mound. The pit was refilled with clay, though the subsoil in which it had been excavated was loose. In it were many disarticulated bones and a rib cage which, from the placement of the individual ribs, was probably intact at the time of burial. With the bones was a single, unfinished bannerstone and 2 Godar Side-notched points.

In summary, the burial components yielding Etley Barbed points can be assigned to the Titterington Focus known from several components in the St. Louis and lower Illinois Valley region. Later it may prove feasible to group sites with Godar Side-notched points into this same complex, or alternatively they may have different functional or temporal significance.

Another and somewhat different Archaic or Early Woodland burial complex is represented by the initial component of Klunk Mound 7. The 1960 Gilcrease Foundation excavations located 7 crematories containing the remains of flexed skel-

etons and many disarticulated bones; all were wholly or partially burned. In close proximity to the crematories were a number of circular pits excavated into the subsoil and containing unburned flexed interments; the pits were covered with limestone slabs, as was the primary mound built over all these features. (For a more complete description see Perino, 1961: 50f.) Burial associations included stone, pearl, shell, and rolled copper beads, 14 plummets, 2 Kampsville Barbed points, 3 unnamed stemmed points, galena cubes, 2 worked mussel-shell ornaments, 3 copper fishhooks, 1 fishhook made of marine shell, bone awls, a worked beaver incisor, a socketed antler maul, 2 antler flakers, and bits of charred fabric. Samples of charred wood from the crematories have been submitted to the Michigan Memorial-Phoenix Project Radiocarbon Laboratory for analysis.

The only Archaic habitation site from which considerable data have been recovered is the Poor Farm situated at the bluff-base in the Illinois Valley, a mile north of the present town of Hardin. Grading operations for school construction brought to light from 50 to 100 grooved axes, numerous drilled and grooved plummets of hematite, occasional pebble pendants, and quantities of Karnak Stemmed projectile points. This type is defined in the forthcoming projectile point classification of Howard Winters of the Illinois State Museum. A particularly significant fact is that without exception the large number of axes were three-quarter grooved. Finally, hundreds of pebble manos and hammerstones, together with large boulder mortars were recovered during earth-moving operations.

The Woodland Horizon in Calhoun County

Sites representative of the Early Woodland horizon are exceedingly scarce in Calhoun County. This may reflect in part differential archaeological interest, but also wood seem to indicate low population densities by comparison with the later Hopewellian period. The first definite Early Woodland component from which an artifact assemblage can be described has yet to be located here, though a few Marion Thick and Morton complex sherds (cf. Griffin, 1952) from the Gilcrease Foundation excavations at the Snyders site, together with earlier evidence from the University of Michigan strat-

itests there (Powell, 1957), represent traces of an early, pottery making expression. Traces of Black Sands Incised pottery have begun to appear along the sand ridges in the Illinois Valley flood plain, and subsequent surveys may reveal further occupational evidence here

Pottery representative of the Central Basin horizon in the middle Illinois Valley (Bluhm, 1951), and preceding the advent of the Classic Hopewell series (i. e. "Hopewell ware"), is also scarce in this locality. Sister Creeks Punctated, Fettie Incised, and Neteler Crescent-Stamped types occur infrequently and on a few sites only.

Living sites of the Hopewellian period (Griffin's Middle Hopewell), all bearing sherds of the Classic Hopewell series, are numerous in the lower Illinois Valley. They occur most often along the talus slope at the bluff-base, particularly at the juncture of a secondary valley with the main stream course (Struever, personal communication). Among the better known are Snyders (Griffin, n. d.; Fecht, 1961) and Knight (Griffin, 1958:13; McGregor, 1958). Mound groups have been explored in close proximity to both occupation sites (Titterington, n.d.). Other Hopewell burial components excavated in Calhoun County are Klunk (Perino, n. d.), Kamp (Struever, 1960), and Meppen. While the spatial relationship of Hopewell mound groups to living sites in this locality remains an important problem for future investigation, it has been observed that often burial components give no evidence of an occupation site in close association. Perhaps more than one local group utilized a single, specialized burial site.

By comparison with all earlier horizons, Hopewellian living sites are numerous in the lower Illinois and adjacent Mississippi valleys. If characterized in general terms, they occur as small, relatively deep midden deposits that yield high artifact densities and many, large cylindrical or conoidal storage-refuse pits. The picture is one of small local communities with a high degree of residential stability. There is little evidence that stable residence can be attributed to a productive maize or other horticulture. Numerous charred nut shells and occasional seeds representative of wild species indicate plant collecting was an important part of subsistence, as was hunting, to judge from the quantities of faunal debris recovered in the

middens.

In light of the evidence for a primarily hunting-collecting economy, it would seem that residence in small, scattered communties was designed with respect to the availability of natural food resources in the major river valleys. Stuart Struever is currently engaged in a study of Hopewellian subsistence and settlement patterns in the lower Illinois Valley and it is hoped this will clarify some of the preceding suggestions.

Upon disappearance of diagnostic Hopewellian artifact styles and burial practices, no recognizable depopulation or foreign intrusion can be seen in the Late Woodland materials from Calhoun County and surrounding areas. Late Woodland (i.e. "Jersey Bluff") mound groups occur in great numbers in the lower Illinois Valley. They are usually found as a group of small mounds strung along the bluff crests overlooking the major valley; occasionally groups are located along the secondary streams leading into the Illinois. Burial procedure will be discussed in a forthcoming publication of the Thomas Gilcrease Foundation. It is closely related, though not identical to, the Jersey Bluff complex described by Titterington (1935; 1942) from components excavated across the Illinois Valley from Calhoun County. In comparison to Hopewell, Late Woodland mortuary practices show simplification, with emphasis on flexed and not extended burial position. Whereas cremation is rare in the preceding Hopewellian phase, it does occur in Late Woodland, though varying in importance from one component to another. Three of the Klunk mounds (Perino, n. d.) were built over 7 crematories assigned to the Late Woodland period. A long period of Late Woodland occupation, it can be predicted, will emerge when the great variety of localized cordmarked wares are understood in terms of their relative temporal positions (cf. Struever, 1961:96).

Finally, sometime during the Eighth or Ninth centuries A. D., Mississippian influences began to infiltrate the lower Illinois Valley, and are reflected in a number of ceramic and lithic style changes. One of the Klunk mounds, for example, yielded pottery that combines typical Late Woodland and Mississippian elements on the same vessels. Some of these have crude-

ly executed Old Village decorative motifs on the exterior surface. All in all, the Mississippian intrusion was apparently light, and in fact may not have included the actual settlement of Mississippian population in the locality. Certainly a distinct Mississippian occupation like that seen a few miles to the south at Cahokia is not in evidence.

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A WOODLAND SITE IN CANADA

Charles Cochran

Recently, while visiting near Lake of The Woods, Canada, I was directed to an Indian site located on the north bank of Rainy River (an international boundry) about five miles west of the town of Rainy River, Ontario.

This site, I found, was practically untouched. The youngsters of A. Beyak, the owner, were the only ones who had searched the site for artifacts. They had encountered numerous pottery sherds and a nice thumbnail scraper.

While looking the site over I was quite impressed by the striking similarity between it and several woodland sites in the United States. While picking up and examining potsherds I could not help but be reminded of earlier days that I had spent at the Dillinger Woods site in southern Illinois, one of the most typical of the late woodland type in the state.

Among the items found at the site during my inquiry were fifty-four potsherds showing definite cord paddle markings as well as some dentate stamping on several rimsherds, one piece of worked copper and three complete projectile points. Two of these points were triangular in shape (one with prominent serrated edges) and both black in color though one was made of flint, the other of chert. The third point was a nice side-notched arrowhead made of black flint. None exceeded an inch and a half in length.

The pottery (Fig. 1) and artifact characteristics lead me to believe that this site must fall in the late woodland category dating it between A. D. 700 and 1200 *. The potsherds showed both grit and shell tempering.

I understand a Canadian archeologist has shown some interest in this site and other local sites but, to my knowledge, no work has been done or is being planned at the present time.

Mussel and bone fragments were found in large quantity as well as several flint chippings. The bone fragments, which I feel are human, present a mystery to me. I've found that many of them show an added red coloring. Knowing as little

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* Middle Woodland is also represented. One of the sherds shows a fine example of Hopewell rouletting. (Editor.)

as I do about Red Ochre cultures, I hesitate to categorize these bone remains. I am sending samples of them to qualified men and perhaps they can discover what this rather unusual fact represents.

I would like to do more research at this and other Canadian sites as I feel much can be learned concerning American archeology from contributions of Canada. The prehistoric Indians knew nothing of an international boundary and I'm sure their various cultures spread freely all over the present-day United States and Canada.

Evidence of Late Woodland occupancy is found over all of the upper Great Lake area. [1]

[1] Quimby, G. I. 1952, **Archeology of Eastern United States**, page 105.

Figure I

BOOK REVIEW

Suzanne de Borhegyi

ARCHAEOLOGY IN THE AMERICAS, by Mary Elting and Franklin Folsom. Harvey House, Publishers, Irvington-on-Hudson, New York, 1960. 160 pages, 4 color plates. $2.95.

ARCHAEOLOGY IN THE AMERICAS is an exceedingly well written, up-to-the minute, and attractive book for children in the ten to fourteen year old age bracket. The authors, a husband and wife team writing as Franklin Folsom and Mary Elting, bring archaeological fact and technique to the child's level of understanding while presenting a thorough survey of the most significant finds and personalities in the field of New World archaeology. This is a book for any young person with a yearning for excitement and adventure. It is especially recommended for would-be archaeologists who wish to know how they can share in the great scientific search that is going on all over the Americas. And I daresay many a parent will also find the book interesting and informative reading.

ARCHAEOLOGY IN THE AMERICAS is beautifully illustrated with line drawings by Kathleen Elgin. There is a final section containing some important "Do's and Don'ts" for amateurs; a list of museums, archaeological sites and archaeological organizations; a recommended bibliography; a list of recommended films: and a pronouncing index.

CONGRATULATIONS

At the March meeting of the Milwaukee chapter the following officers were elected:

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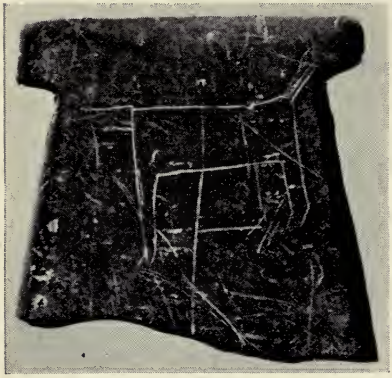
Interesting Wisconsin Specimens



POLISHED STONE PENDANT

Of Ohio steatite. With engraving of deer on one side, two deer on other. Sheboygan Marsh area, Sheboygan County. M. S. Thomson Collection.

OLD COPPER KNIFE

With 33 decorating punch marks on inner portion of blade. Length 7¾ inches. Found near Black River Falls, Jackson County. L. J. McCann Collection.

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THE WISCONSIN ARCHEOLOGIST

SOME ADDITIONAL DATA ON THE BELOIT COLLEGE MOUND GROUP, Tyler Bastian 57

THE J. F. NORMAN COLLECTION OF COPPER ARTIFACTS, Peter Jenson 65

THE UNDERWATER SEARCH FOR PYRAMIDS IN ROCK LAKE, Jefferson County, Wisconsin, Lon Mericle 70

COPPER MINING HAMMERSTONES FROM UPPER MICHIGAN, Burton Straw 76

THE BOOKSHELF, David A. Baerreis 77

THE COLLECTOR'S CORNER 84

INTERESTING WISCONSIN SPECIMENS 85

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Paul A. Koeppler, 5284 N. 83rd St., Milwaukee, Wis.

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Dr. Robert Ritzenthaler, Milwaukee Public Museum, Milwaukee 3, Wis.

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SOME ADDITIONAL DATA ON THE BELOIT COLLEGE MOUND GROUP (Ro 15) *

Tyler Bastian

University of Utah

ABSTRACT

A radiocarbon date of 500 + — 150 A. D. was determined on charcoal from Beloit College mound 6, Beloit, Wisconsin. The spatial-temporal position of the Beloit College group is briefly discussed, and some addenda and errata to an earlier report on this group are given.

Wood charcoal lying near the base of circular mound 6 of the Beloit College mound group, Beloit, Wisconsin (Bastian, 1958), was dated at 500 + — 150 A. D. (M-871. 1460 + — 150 years ago, Crane and Griffin, 1961: 111) by the University of Michigan Memorial - Phoenix Project radiocarbon laboratory through the courtesy of Dr. James B. Griffin. The charcoal was in two irregular, elongated alignments 0.5 and 0.8 of a foot long. One of these appeared to be the scattered remains of a stick. The specimens were 5.0 to 7.0 feet from the center of the mound, 1.4 feet below the surface of the mound, and 0.1 to 0.7 of a foot below the level of the ground surface surrounding the mound. Cultural refuse was found down to 0.8 of a foot below the level of the surrounding ground surface. There was no suggestion that the charcoal was associated with any feature, or that it was burned in place. Since the actual base of the mound was not discerned in the profile, it is not known whether the refuse, including the dated charcoal, found below the level of the surface of the surrounding ground was part of the mound fill, or if the refuse was the result of occupation in that area. This was

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* Acknowledgements. This paper has profited from the written or verbal comments on an earlier draft by Mr. Norman F. Barka, Dr. Richard O. Keslin, Mrs. Helen L. D. Richardson, and especially Dr. Warren L. Wittry. I extend my appreciation and thanks to them.

pointed out in the original report (Bastian, 1958: 166), although it was also stated that the charcoal was ". . . lying on the probable mound floor . . ." (p. 168). The description in **Radiocarbon** (Crane and Griffin, 1961: 111) does not mention these uncertainties.

A small test dug a few feet from the mound was sterile, but it was inadequate to conclusively demonstrate that there was no pre-mound occupation at this site. Additional tests should be conducted. The amount of time separating the original deposit of the refuse included in, and perhaps beneath, the mound, and the subsequent construction of the mound is not known. However, all of the artifacts found, and the features of the mound construction are suggestive of Effigy Mound culture.

The charcoal from mound 6 was carelessly collected. The topmost part of the charcoal was exposed, and then covered with a single layer of paper which had been printed by the fluid or spirit duplication method. The charcoal was exposed to the printed side of the paper, and to some light showers, for six days. It is not known whether the printed sheets could have contaminated the sample. This additional uncertainty is most regretable.

The other mounds in the Beloit College group can not be dated relative to mound 6. The excellent preservation of the skeleton in mound 3 does not necessarily imply that it is more recent than the poorly preserved skeletal material from other mounds in the Beloit College group. Mound 3 was well drained because of its location on the edge of a small gully. Of the three mounds with fragmentary skeletal material, two (2 and 6) were located in a flat, poorly drained area, and one (4) had been disturbed. The only available artifact from other than mound 6 is a small, straight-based, unnotched, triangular projectile point from mound 4. Points of this type used to be attributed to Mississippi cultures in Wisconsin, but it is now known that they also occur in Late Woodland cultures, including Effigy Mound culture (Keslin, 1958: 243, and Wittry, 1959b: 260-1). Wittry suggests, however, that such points may be absent from early Effigy Mound culture.

The spatial-temporal position in Effigy Mound culture of Beloit College mound 6 is presented in Figs. 1 and 2. McKern (1942: 164) looked to northwestern Wisconsin for the development of Effigy Mound culture, because only small linear, oval, and circular mounds were known in that area. He has since recognized that these characteristics could be due to the peripheral location of this portion of the Effigy Mound region. (Wittry, 1959b: 258). The latter alternative seems to apply to the Wakanda Park mound group which is in the northern part of the Effigy Mound area, and has simple mounds, some distinctive artifacts, and a radiocarbon date of 1208 + − 200 A. D. Wittry (1959a: 115) suggests that Effigy Mound culture developed in southern Wisconsin.

Two mounds in northeastern Iowa, containing pottery suggestively near a Middle to Late Woodland transitional culture, have been radiocarbon dated (Crane and Griffin, 1961: 113). A specimen from a mound of the French Town group is described as "a small very late Hopewell vessel with plain rocker-stamping on the body." The vessel was found beneath a charcoal layer dated at 240 + − 150 A. D. Valley Mound of the Harpers Ferry group produced "very late rocker-stamped pottery and a late Woodland vessel with cord-impressed, upper-rim design," according to Griffin. Charcoal from this mound was dated at 230 + − 150 A. D. The date from Beloit College mound 6 (500 + − 150 A. D.) is not much later than the Iowa dates, but no rocker stamping was recognized on sherds from the Beloit mound. Wittry has pointed out (1959: 256-7) that "evidence of cultural contact between Hopewellian and Effigy Mound is limited in its geographical distribution to the western border of the Effigy mound area . . . ." If Effigy Mound culture developed out of Hopewell culture near the Mississippi River valley, the date from Beloit College mound 6 may be relatively early for south central Wisconsin. On the other hand, if Effigy Mound culture developed more or less independently in south central Wisconsin, the Beloit date may not be particularly early in Effigy Mound chronology. *

The historic descendents of the Effigy Mound culture are not known. The Dakota or Menomini are possibilities (Quimby, 1960: 87), but the Winnebago are now generally believed

not to be the descendents of the Effigy Mound builders. (Griffin, 1960, has summarized this modern view.)

Recent estimates of the chronological position of Effigy Mound culture are summarized in Table 1.

Table 1

The chronological position of Effigy Mound culture according to several authorities.

Authority	Chronology	
	Origin	End
Rowe (1956: 91, 83)	Early Woodland and Hopewell	at introduction of Mississippi cultures
Keslin, (personal communication, September, 1961, and 1958: 266)	Late Early Woodland	Upper Mississippi 1200 or 1300 A. D.
Wittry (1959b: 259, 261)	Late Middle Woodland 500 to 600 A. D.	Late Woodland and Mississippi Period
Griffin (1960: 826)	700 to 800 A. D.	13th and 14th centuries and probably later
Quimby (1960: 87)	700 or 800 A. D.	about 1300 A. D.

Pottery from Mound 6

The original report on mound 6 (Bastian, 1958: 166-7) did not adequately describe the thickness of the sherds. The discrepancy between the total number of sherds tabulated in Table 2 and in the original report (213) occurs because Table 2 includes very small fragments that were not considered in the original report.

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* **Addendum.** Three more radiocarbon dates for Iowa have been determined on the Effigy Mound complex at Effigy Mounds National Monument: heart region of bear-shaped Mound 77, 386 + — 100 A. D. (1575 + — 100 B. P., I-411) and 636 + — 100 A. D. (1325 + — 100 B. P., I - 412); and disturbed area in linear mound 69, 531 + — 75 A. D. (1430 + — 75 B. P., I-413). These data are from **Missouri Basin Chronology Program,** statement no. 3, p. 3. Smithsonian Institution, Feb. 1, 1962.

Table 2

Thickness of sherds from the fill of mound 6.

Maximum thickness in mm.	Number of Sherds cord-marked	plain	total
2.5	4		4
3.0	10		10
3.5	17		17
4.0	21	8	29
4.5	23		23
5.0	3 (1 rim)	7	10
5.5	1	5	6
6.0	5	6	11
6.5		7	7
7.0	3	13	16
7.5		1	1
Total measurable sherds	87	47	134
Mean thickness	4.12	5.84	4.72
Unmeasurable sherds:			
Interior exfoliated	48	2	50
exterior exfoliated, and very small fragments, including two possible rims			62
Totals of all sherds	135	49	246

Mound 3

This linear, partly excavated in 1953 (Bastian, 1958: 164-5), was re-opened in the fall of 1959. Two five-foot squares were dug, and a few sherds were found (Keslin, personal communication, September, 1961).

ERRATA

There are several errors in the previous report (Bastian, 1958) on the Beloit College mound group:

p. 156. Emerson was the second faculty member of Beloit College, not the first president.

p. 159. A bar was omitted in the quotation from the plaque on mound 23. In Collie's words, "I have had a bar put between the description of the mounds and the line, Ancient Home of the Winnebagoes so that the two could not necessarily be connected." (Letter from G. L. Collie to C. E. Brown, March 7, 1924. Wisconsin State Historical Society, file WIS—MSS HB, Box 38.) Note that Collie wrote this the year after the publication of **The Winnebago Tribe**, in which Paul Radin concluded that the Winnebago had built the effigy mounds.

p. 159. All dimensions of mound 27 are unknown.

p. 159. No. 7, line beginning "88; Vol. n. s." should read "88; Vol. 1, n. s."

p. 160 and 173. C. C. Brown should read C. E. Brown.

p. 167. 2 square centimeters should read 4 square centimeters.

p. 170. Figure 10 is of mound 6, not mound 5.

p. 171. Considering the meager, often negative, data available on the Beloit College mounds, it is not well to single out any particular group, such as Kletzien, that the Beloit group most closely resembles. Baerreis' (1954: 48) statement about another site applies equally well

here: "It is evident that the archeological analysis of this material must proceed mound by mound, not by lumping the traits of the mound group."

p. 173. Beloit College was founded in 1847, not 1848.

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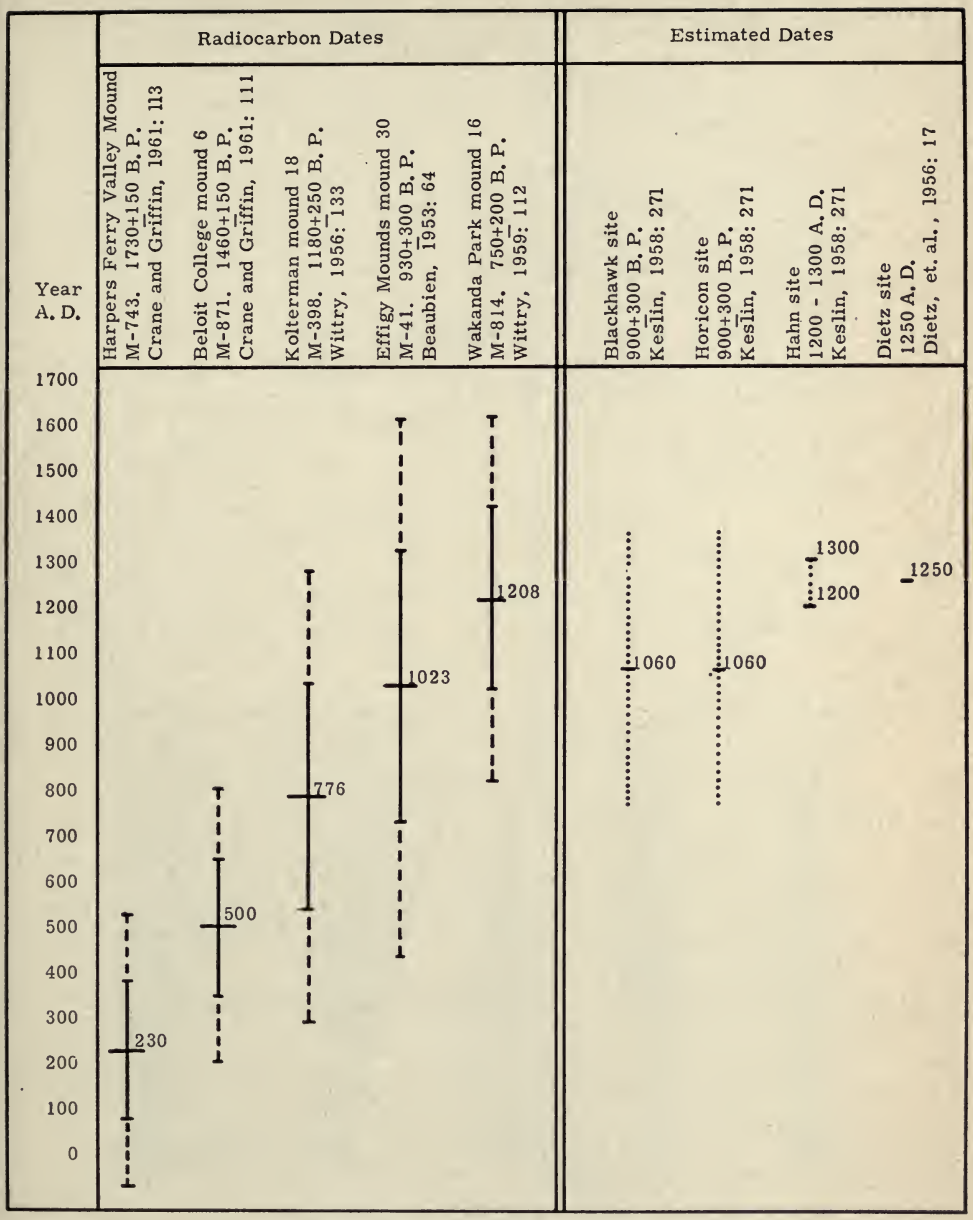


Fig. 1. Dates for Effigy Mound Culture

It is fortuitous that all the radiocarbon dates apply to mounds, and that all the estimated dates apply to camp sites. Effigy Mound culture camp sites were not generally recognized (Rowe, 1956: 51) until very recently (Keslin, 1958, and Wittry, 1959).

Heavy line indicates one standard deviation from the mean (68% probability that true date of specimen actually falls in this range), broken line indicates two standard deviations (94% probability).

Fig. 2. Effigy Mound Culture Sites

The map shows most of the excavated sites frequently or recently referred to in the literature. It does not necessarily indicate the density distribution of Effigy Mound sites. The general outline of the Effigy Mound culture area is from Rowe (1956: 11).

THE J. F. NORMAN COLLECTION OF COPPER ARTIFACTS

Peter Jenson, Curator of Archeology
The Science Museum, St. Paul, Minnesota

Because of the revived interest in Old Copper artifacts at the present time there is a definite need for publication of information about collections and photographs of copper items. The J. F. Norman copper collection was donated to The Science Museum in 1953. Most of the items were collected in the early 1900's, in northeastern Minnesota or in Wisconsin. Shortly after The Science Museum received the Norman Collection, Dr. Elden Johnson and Dr. Louis H. Powell, then Curator of Archeology and Director of the museum, respectively, visited the Crookston area where several of the artifacts had been found in a restricted locale. They were unable, however, to find any evidence of a habitation or burial site.

All reported Old Copper artifacts occurrences in Minnesota to this date have been surface finds. Accession numbers are those given by The Science Museum. Measurements given are for over-all length of each item.

Plate No. 1. Stemmed and Socketed Copper Points, Relatively Narrow-Bladed and Triangular in Cross Section.

(L. to R.)

1. Acc. 2101/11, found in 1910 near old Pembina Trail in Lake Pleasant Township, Red Lake County, Minnesota, 16.43 cm.
2. Acc. 2101/10, history lost, 17.40 cm.
3. Acc. 2101/16, found in Wisconsin, county unknown, 13.13 cm.
4. Acc. 2101/7, found in May, 1921, Sec. 8 of Lowell Township, Polk County, Minnesota, 16:63 cm.
5. Acc. 2101/23, found in Wisconsin, county unknown, 14.05 cm.

Plate No. 2. Stemmed and Socketed Copper Points

(L. to R.)

1. Acc. 2101/14, triangular in cross section, relatively narrow-bladed, found in Wisconsin, county unknown, 10.58 cm.
2. Acc. 2101/13, slightly double convex in cross section, relatively broad-bladed, found in Wisconsin, county unknown, 11.24 cm.
3. Acc. 2101/15, triangular in cross section, relatively narrow-bladed, found in Wisconsin, county unknown, 13.23 cm.
4. Acc. 2101/1, triangular in cross section, relatively narrow-bladed, found in 1930 on Ralph Findenbinder farm, Sec. 19, Andover Township, Polk County, Minnesota (bent by plow), 11.43 cm.
5. Acc. 2101/19, slightly double convex in cross section, relatively narrow-bladed, found in Wisconsin, county unknown, 7.81 cm.

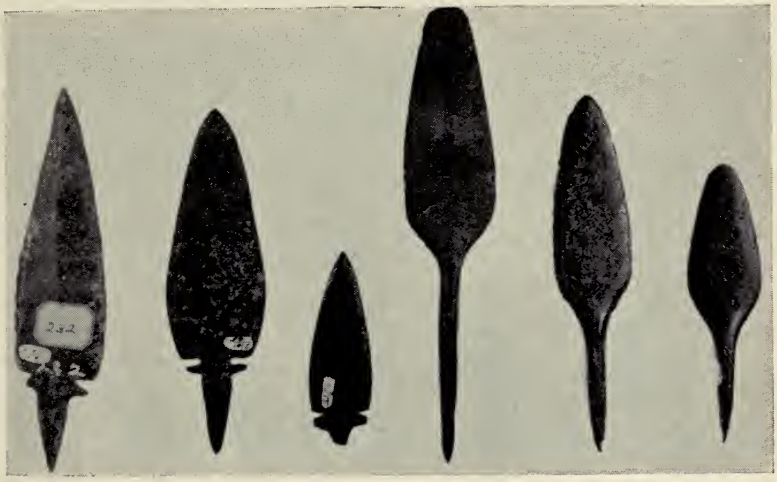


Plate No. 3. Notched and Stemmed Copper Points and Rat-Tail Spears.

(L. to R.)

1. Acc. 2101/25, notched and stemmed point, found in 1918 near Fisher, Minnesota, in Polk County, hole in blade drilled by finder, 14.02 cm.
2. Acc. 2101/5, notched and stemmed point, found in 1934 three miles east of Red River in Section 6 of Roome Township, Polk County, Minnesota, 12.82 cm.
3. Acc. 2101/2, notched and stemmed point, found in 1926 in Gentilly Township, Polk County, Minnesota, 7.14 cm.
4. Acc. 2101/12, rat-tail spear, found in 1925 on Branseth farm, Section 28, Vinland Township, Polk County, Minnesota (artifact bent and one side polished when caught on point of plow), 16.84 cm.
5. Acc. 2101/4, rat tail spear, found in 1929 by road grading crew near Crookston, Polk County, Minnesota (road from Dorothy to Huot), 13.14 cm.
6. Acc. 2101/3, rat-tail spear, found near Crookston, Polk County, Minnesota, history lost, 10.32 cm.

Plate No. 4. Copper Axe, Flat-Tanged Knives, Stemmed Points and Awls.

(Top)
1. Acc. 2101/24, axe, found near Indian Ford, near Edgerton, Wisconsin, 15.02 cm.

(Bottom, L. to R.)
1. Acc. 2101/8, flat-tanged knife, found in 1926 in South half of Section 8, Lowell Township, Polk County, Minnesota, 16.84 cm.
2. Acc. 2101/18, flat-tanged knife, found in Wisconsin, county unknown, 11.43 cm.
3. Acc. 2101/17, stemmed point, slightly double convex in cross section, found in Wisconsin, county unknown, 12.04 cm.
4. Acc. 2101/21, stemmed point, slightly double convex in cross section found in Wisconsin, county unknown, 6.08 cm.
5. Acc. 2101/20, stemmed point, slightly double convex in cross section, found in Wisconsin, county unknown, 5.41 cm.
6. Acc. 2101/31, awl, square in central cross section, history lost, 4.29 cm.

(Not shown)
7. Acc. 2101/30, awl or needle, double convex in central cross section, history lost, 6.55 cm.

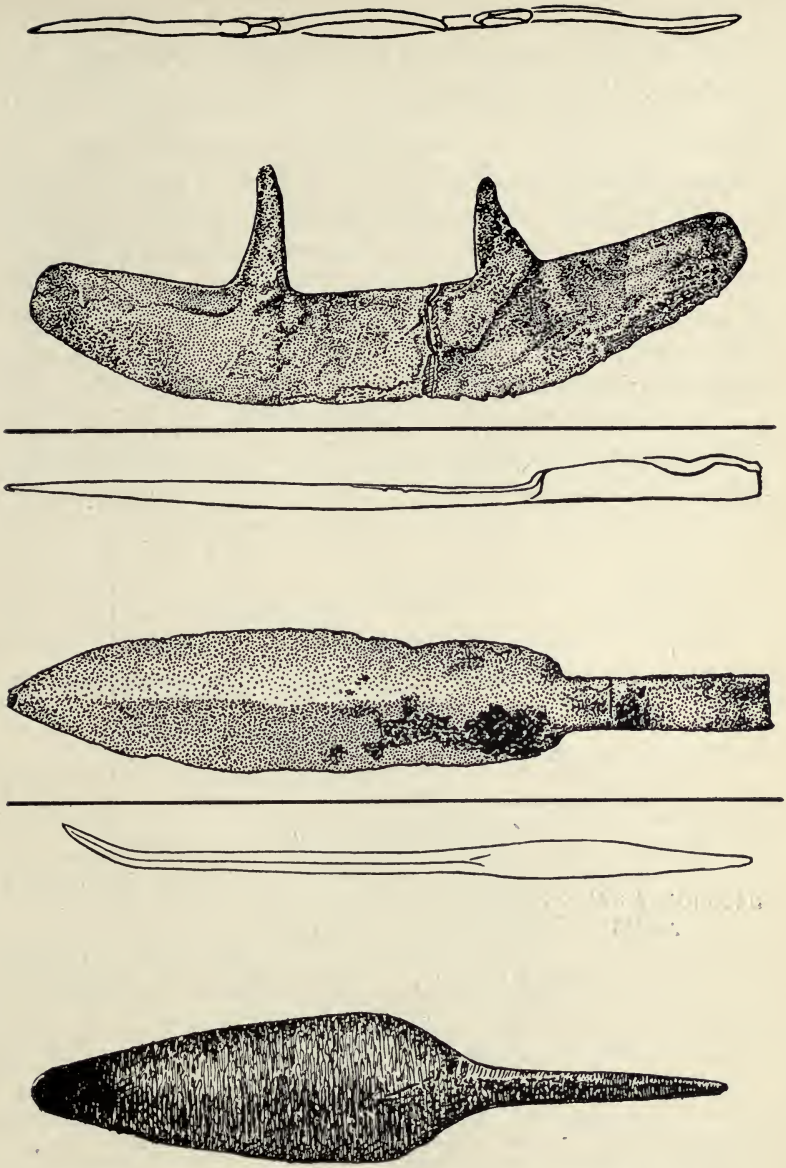


Plate No. 5. Copper Knife or Scraper, Socketed Point and Rat-Tail Spear.

(Drawings, L. to R.)

1. Acc. 2101/9, chopping knife or crescent scraper, found in 1926 in South half of Section 8, Lowell Township, Polk County, Minnesota, 15.00 cm.
2. Acc. 2101/22, socketed copper point, found near Embarrass, Wisconsin, 15.75 cm.
3. Acc. 2101/6, rat-tail spear, found near Crookston, Minnesota, history lost, 14.34 cm.

THE UNDERWATER SEARCH FOR PYRAMIDS IN ROCK LAKE, JEFFERSON COUNTY, WISCONSIN

Lon Mericle

The underwater search for pyramids in 1,100 acre Rock Lake, Lake Mills, Wisconsin, was conducted by members of the Midwest Amphibians under the direction of Dr. Stephan Borhegyi, Director of the Milwaukee Public Museum. The Midwest Amphibians is a Milwaukee amateur scuba skin-diving club, and Doctor and Mrs. Borhegyi are on their membership roster.

Eleven hundred acres is a considerable area to examine underwater, and four Sundays were spent in a rather complete search of the Lake bottom. The work was done in early

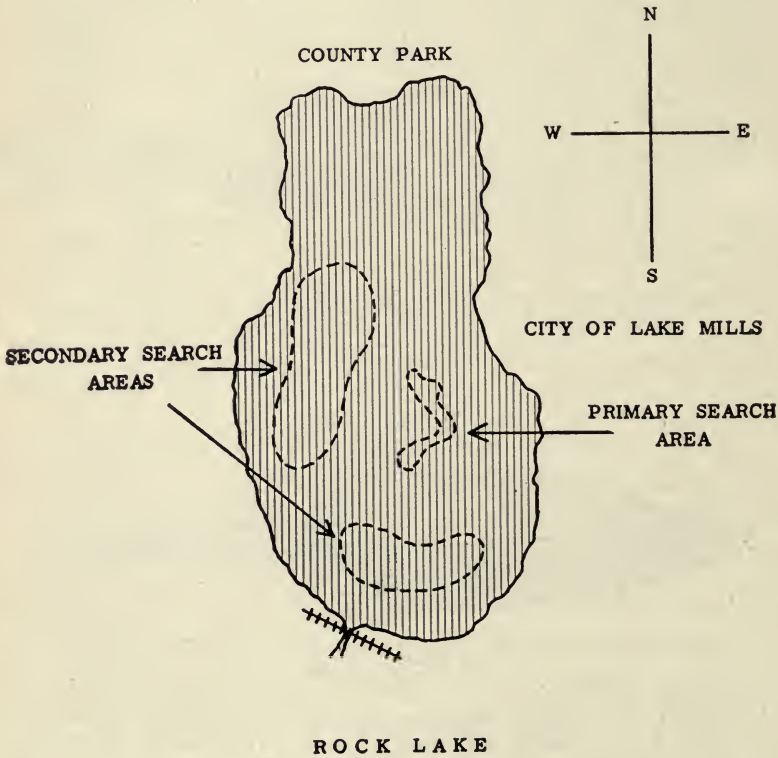
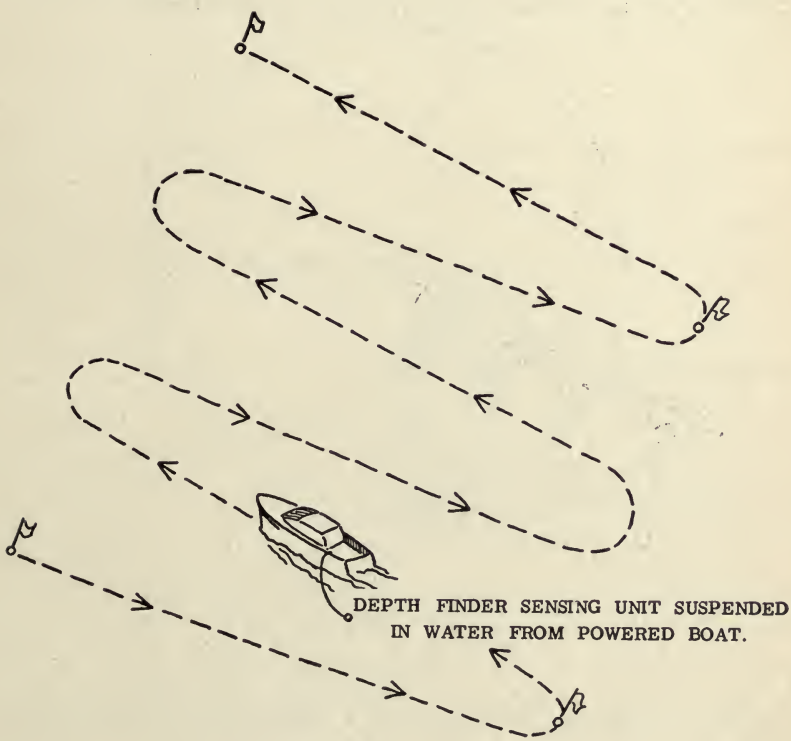


FIG. 1

spring — as soon as the ice cleared off the Lake. At that time the water has maximum clarity and the underwater plants have not started to grow, so the scuba diver has the best chance of seeing the remains of any man-made structures.

Anthropologists recognize the Aztalan Indians as emigrants from the main camp of Indians from the Cahokia Mound on the outskirts of what is now East St. Louis, Illinois. In contrast with the North American Woodland Indians, they stockaded their villages, practiced cannibalism, and built large earthen truncated pyramids as part of their religion.

Most Wisconsin residents have visited the Aztalan State Park, located on the west bank of the Crawfish River, south



METHOD OF PLOTTING DEPTHS OF LAKE BOTTOM.

FIG. 2

of Highway 30. The area was declared a State Park in 1955, and the State Park Service has done a marvelous job in reconstruction of the area that had been farmed on over the last one hundred years. The most impressive feature of the park is the pyramids.

Rock Lake is about four miles to the west of the Aztalan site, and it is possible that a site could have been located there as well as on the Crawfish River. Was Rock Lake at one time the bed of the river? Or was the Lake level

PROCEDURE OF SCUBA DIVERS IN VISUAL EXAMINATION OF LAKE BOTTOM. DIVERS SPACED ACCORDING TO WATER CLARITY. OVERLAPPING OF SEARCH PATTERNS NECESSARY TO BE SURE OF COVERING ENTIRE AREA.

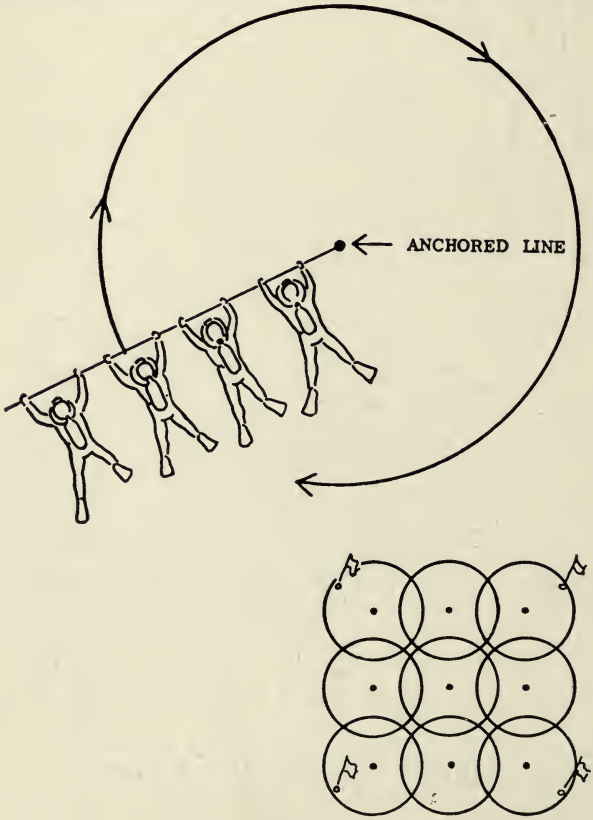
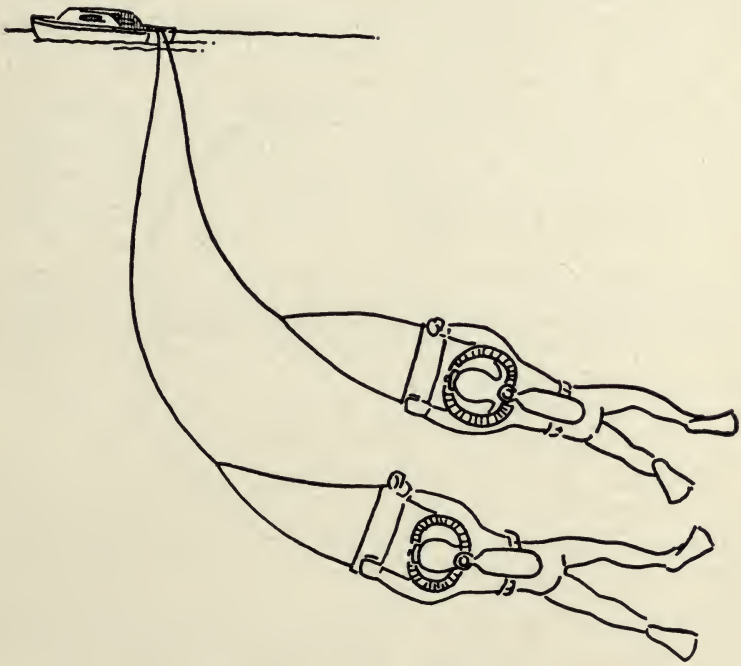


FIG. 3

sufficiently lower at some time centuries ago so that there were islands in the Lake and the Aztalan Indians used them for building pyramids? Many people in the Lake Mills area have speculated on these questions and some have considered the possibility that there are pyramids under the Lake's present level.

The City of Lake Mills had their centennial in 1936, and extensively publicized themselves as "The Pyramid City." Two brothers, Lee and Claude Wilson, originally claim to have seen the pyramids while returning across the Lake in



METHOD OF TOWING DIVERS BEHIND BOAT TO OBSERVE BOTTOM.

FIG. 4

a boat some fifty years ago. The Lake level was considerably lower than it is at the present time, and an oar from their boat could touch the top of the pyramid — less than five feet below the surface. A Lake Mills dentist, Dr. F. S. Morgan, claims to have seen three pyramids while flying over Rock Lake many years ago. Max Nohl, Milwaukee diver, did some underwater research in Rock Lake and said that he found something that resembled a masonry structure of smooth stones set in mortar.

Lee Wilson is now a retired mail carrier, and we had the opportunity of talking with him. Dr. Morgan is retired and lives in St. Petersburg, Florida. Max Nohl was killed in an auto accident in Arkansas in February, 1960.

With this background, and under the guidance of Dr. Borhegyi, we started our search. The search party consisted of fifteen divers using several boats. A depth finder was trailed by a power boat to get the contour of the bottom of the Lake. Floating buoys were anchored determining a rectangular area, and the depth of the water in that area determined by a cruise pattern (see Figure 2). Then, by plotting the soundings of several such rectangular areas, we attempted to select areas of probable pyramid locations. A team of several divers would cover a selected area by visually examining the bottom in a manner illustrated in Figure 3. We felt that we were able to thoroughly cover an area in this manner.

In other areas of the Lake that did not warrant such an extensive search, two or three scuba divers were slowly towed underwater behind a powered boat to visually inspect the bottom for the pyramids (Fig. 4).

We had high hopes of finding the elusive pyramids, but so far have not found them. We have no regrets in undertaking this enterprise, but we just didn't find them. So, we come to the conclusion that pyramids may possibly exist in the Lake, but not where we looked. Therefore we say that we know where they are **not**. We retain our maps and once or twice a year we schedule a dive at Lake Mills and give it another try. For that is the philosophy of a scuba diver. The world underwater is large, and man is small, and we keep trying.

EDITOR'S NOTE:

We salute the courage and optimism of the skin divers. However, there are some geological and anthropological facts to be considered here. The Wisconsin Indians constructed mounds for two reasons: as a burial place for their dead, and as sub-structures for temples built on top (as Aztalan). Neither of these reasons would call for an underwater setting, so the reasoning must be that the mounds were built before the formation of the lake, or that a subsequent rising of the lake flooded mounds built along a previous shore. Rock Lake is a Pleistocene formation at least 10,000 years old, while mound-building did not begin in the New World until roughly 2,000 years ago. Thus there is no possibility of the mounds having been built previously to the formation of the lake. As to the hypothesis that mounds were constructed along the shore within the last 2,000 years and flooded by a rise in the lake level, there is no geological evidence to indicate a rise in the lake level. Indeed the picture is one of reverse . . . that lake levels have tended to become lower since their origin.

It seems most probable that any lake bottom formations are due to glacial action. The dumping of concentrations of gravel or rock as the ice block melts during the lake-building stage is not unusual, and for some of these to have roughly pyramidal shape is not difficult to conceive. Later covered with silt they could assume a man-made look. The evidence for the geological explanation is so overwhelming, and the man-made theory so remote that no doubt remains in the mind of this writer.

It is to be hoped, however, that the skin divers of the Midwest Amphibians Club complete their survey of the lake to once and for all scotch the reports and rumors that capture the romantic fancy of people, but often tend to confuse the actual picture.

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COPPER MINING HAMMERSTONES FROM UPPER MICHIGAN

Burton Straw

This photo shows nine of a collection of about 150 grooved and ungrooved hammerstones found by the author in June of 1962. They occurred in clusters of a dozen or so in undisturbed soil and about a foot below the surface at the Minnesota Mine on the outskirts of Rockland, Ontonagan County, Michigan. Some 100 of the specimens are grooved, one having a double-groove. Every one in this collection is broken, but the writer has seen some whole ones taken from this site.

THE BOOKSHELF

By

David A. Baerreis

and

Guest Reviewers

With this issue, the review section of THE WISCONSIN ARCHEOLOGIST appears in a new format. It is hoped that through informal comments on Wisconsin publications and a discussion of the relevance to Wisconsin problems of literature on adjacent regions and archaeology in general, we can keep abreast of a growing body of data. There is a need for a more systematic appraisal of the literature in our journal. Wisconsin archaeology will make more rapid progress to the extent that we build upon and take advantage of the insights, interpretations and solid foundation of facts provided by the broader body of archaeological literature. Since many of our members rely primarily on this journal for their archaeological reading, we hope that THE BOOKSHELF can provide a bridge to important studies that appear in other series.

* * * * *

The Red Ocher Culture of the Upper Great Lakes and Adjacent Areas by ROBERT E. RITZENTHALER and GEORGE I. QUIMBY; Fieldiana - Anthropology, Vol. 36, No. 11, pp. 243-275; Chicago Natural History Museum, 1962. $1.00. (Orders should be addressed to: Chicago Natural History Museum, Roosevelt Road and Lake Shore Drive, Chicago 5, Illinois.)

This slim report is an important one and, in view of the objectives of THE BOOKSHELF, deserves fuller treatment than its length might appear to warrant. Ritzenthaler and Quimby have tackled the difficult task of defining the elusive Red Ocher culture, one of the transitional groups between the reasonably well known early cultures of the Archaic period and the later mound-building cultures like Hopewell of the

Middle Woodland period. In the course of their definition of Red Ocher, they also clarify the nature of a contemporary culture, Glacial Kame. This clearly has been a major gap in the sequences of Wisconsin prehistory. First, let us summarize their proposals.

Using as a starting point the initial definition of Red Ocher that appeared in the 1937 publication, REDISCOVERING ILLINOIS by Fay-Cooper Cole and Thorne Deuel, and a survey of related sites, a series of nuclear or core traits are defined. These are traits that are always or nearly always present in any Red Ocher site and are enumerated as follows:

(1) use of a layer of red ocher (hematite) to cover the grave;
(2) burials in pits in a flexed position;
(3) large (up to 19 inches long) "ceremonial," flint blades, ellipsoidal in shape with a taper toward a truncated base;
(4) "Turkey-tail" blades and variants of this form that usually occur in small caches;
(5) somewhat crude, small, unnotched, ovate-trianguloid chert knives or points which may occur in large caches;
(6) worked copper, usually in the form of tubular beads but occasionally as awls, celts, knives, or points;
(7) tubular marine shell beads.

Of this group, three (No. 3, 4 and 5) are considered to be diagnostic of Red Ocher and to occur in no other cultural assemblages with which they made comparisons. In addition, a series of peripheral traits are said to be occasionally found in association with nuclear traits. These are:

(1) interment in mounds;
(2) use of cremation or bundle reburial method of interment;
(3) presence of unworked galena cubes;
(4) circular or ovate shell gorgets;
(5) birdstones;
(6) bar amulets;
(7) three hole rectanguloid gorgets;

(8) tubular pipes;
(9) grooved axes;
(10) celts;
(11) Early Woodland pottery.

Red Ocher is defined "as a culture revealed solely through caches and a burial complex in which a number of consistent interment practices appear, accompanied by a comparatively small assemblage of artifacts, three of which appear to be diagnostic" (p. 250). Its distribution is given as ranging from Eastern Iowa to Central Ohio and from Southern Ohio to the Manitoulin District of Ontario. In much of this region we also find the nearly identical Glacial Kame culture. As an indication of the close relationship between the two they describe a Glacial Kame site in the Des Plaines Valley of Lake County, Northern Illinois which is within a few miles of a Red Ocher site. The presence of two sandal-sole gorgets of shell (ornaments made of marine shell, each about 6 inches long and shaped like the sole of a sandal, with 3 perforations along the midline), but none of the other traits serve to differentiate these two cultures. The authors state that had one or more turkey-tail blades been found instead of sandal-sole gorgets, the site would have been assigned to Red Ocher. In a neat use of geological relationships, stratigraphy and radiocarbon dating, the authors clarify the temporal position of Red Ocher and subdivide it into Early and Late phases. Early Red Ocher is placed in the Late Archaic period and dated from some time between 1200 and 1500 B. C. to about 500 B. C. Late Red Ocher, which is characterized by the addition of burial mounds, "certain kinds of pottery" and possibly tubular pipes, is assigned to the Early Woodland period and dated as from 500 B. C. to 100 B. C. or slightly later.

Their study is provided with a superb series of figures that illustrate the various artifacts we have enumerated. The general discussion of the culture is followed by a listing and concise description of the sites upon which their analysis was based. It is concluded by a check list of the traits present at the sites. The report is a model of its kind in that it is clearly written, well illustrated, and the data on which their conclusions are based (and from which the reader may with equal

facility draw alternate conclusions) are thoroughly presented. The authors are to be congratulated on making a substantial contribution to our regional prehistory.

We may now turn to a consideration of how we may best use this important forward step to further clarify our understanding of this region's prehistory. It is perhaps well to explicitly state the nature of some of the concepts with which we are here concerned. At one level of operation, the archaeologist is acting as a scientific reporter. He must describe, with accuracy and precision, the items found at a particular site dealing in addition with their context — their relationships to each other and to the situation in which they are found, for stratigraphy and geological associations may provide important clues to age. But the archaeologist also operates on another level when he makes inferences as to the meaning of the assemblage of traits he has described and isolated. At this second level we are dealing with hypotheses that must be tested by the accumulation of further evidence or by scrutinizing alternate hypotheses that might serve to explain the evidence equally well.

The postulation that we have an Early and a late Red Ocher culture and that Early Red Ocher and Glacial Kame are contemporary peoples who occupied the same area and are descendants from the Archaic Old Copper culture is an example of such a hypothesis which is given in the present study. Ritzenthaler and Quimby are well aware of the tenuous border separating Early Red Ocher and Glacial Kame and indeed suggest that if, in the future, sites are found in which sandal-sole gorgets and the diagnostic Red Ocher traits are in direct association then they will be forced to conclude that the two were the same culture. But we may ask if this would be a satisfactory resolution of the problem. If Glacial Kame and Early Red Ocher are two separate cultures that lived almost side by side in the same region at the same time, it would be most surprising if an exchange of these distinctive artifacts did not take place. What prevented the borrowing? We might take, for the moment, a position in support of an alternative hypothesis, that Glacial Kame and Early Red Ocher are but a single culture and see what facts might fall

in line with this explanation. For one thing, we would not be faced with a situation where two distinct cultures are seemingly interspersed over the same general territory, a distribution which is difficult to explain. We still must face a knotty fact which a separation into two cultures does explain, that the diagnostic traits still have not been found in association with each other. But is it possible that the traits may have a slightly differing distribution in time? May they be markers of a slightly different position in time among peoples of the same cultural tradition? Another question that might be considered is who made the sandal-sole gorgets. They are manufactured from a material exotic to the region, marine conch shell, and it is possible they were obtained in trade in manufactured condition. If this could be the case, then their site distribution would reflect the pattern of trade contacts as well as the particular time period during which they took place. Stress has been placed on the possibility of alternative hypotheses for this is one of the most interesting and challenging phases of archaeological research to which we should devote more attention. For the present moment, however, the Ritzenthaler and Quimby position is an excellent working hypothesis. Further studies of the broader distribution of some of the distinctive artifacts, however, would be an extremely useful contribution to our present knowledge and aid in the evaluation of the hypotheses.

It is in relation to the Late Red Ocher of Ritzenthaler and Quimby, however, that I would like to raise some further and more critical points for discussion. As was previously mentioned, the first description of the Red Ocher culture is to be found in the classic study by Cole and Deuel which did much to set the archaeology of this region on a sound, scientific basis. In their study they proposed that the burial mound Morton F° 11 in Fulton County, Illinois, be the type station of the Red Ocher culture. The proper procedure to be followed, then, in extending this cultural classification to other components is to use F° 11 as a reference point in further comparisons. Ritzenthaler and Quimby have assembled a substantial body of data to justify a broadening of the concept of Red Ocher but in doing this important traits associated with F° 11 have dropped out of the picture. The mound was

quite productive and contained a number of utilitarian forms including projectile points, drills, scrapers, bone awls and a shell spoon that are of crucial importance in extending the Red Ocher complex toward a definition of a culture rather than as primarily a burial complex. Further, an extremely important point was made in the Cole and Deuel study in that a particular kind of pottery (Type 6 in their report) was found in the area only in association with the Red Ocher culture. By contrast, it is disappointing to note that pottery is dismissed in the Ritzenthaler and Quimby study without adequate consideration of its typological characteristics. Pottery is far too useful a tool for such cavalier treatment though admittedly Early Woodland pottery is neither abundant nor easy to work with. Its critical importance, however, may be suggested by a consideration of one of the sites which Ritzenthaler and Quimby include within Late Red Ocher. This is the Sny-Magill Mound 43 in Clayton County, Iowa, for which radiocarbon dates are available and these were used in the study to establish the time range for Red Ocher. Mound 43 does contain some of the traits of the Red Ocher culture but it also contained fragments of a pottery vessel bearing both vertical dentate rocker impressions and horizontal twisted-cord impressions on the neck. The ceramic complex clearly points toward a cultural affiliation in other directions than does the Type 6 pottery of Illinois and raises a serious question as to whether the mound should be included within Red Ocher. Certainly on the basis of a comparison of the total mound content with the type site. F° 11, I would not be inclined to make such a grouping even though a survival of some of the elements of the ceremonial complex might be indicated.

If we seem to have been hypercritical in our evaluation of some of the details of the new publication on the Red Ocher culture, it has been because of the very basic importance of the new definitions presented. We can make progress in our historical reconstructions only through a testing and retesting of the ideas offered.

* * * * *

In keeping with our earlier comments on the need to keep abreast of a growing body of archaeological literature, men-

tion should be made of a new and important research tool. The Society for American Archaeology has added to its publication series a new, annual volume called ABSTRACTS OF NEW WORLD ARCHAEOLOGY, Richard B. Woodbury, Editor. Two volumes have thus far been issued, Volume One covering publications issued in 1959 and Volume Two covering publications issued in 1960. An additional volume is scheduled for each successive year so that we may anticipate having in one convenient source a guide to the archaeological literature of the New World published since 1959.

ABSTRACTS lists published books and articles as well as doctoral dissertations and master's theses. Though an occasional item is listed by title only, in most instances a brief abstract gives the content of the item. Occasional editorial comments indicate the utility of the work and cross-references are used to lead the reader to related articles. Titles are numbered and listed alphabetically within 26 geographic areas and two general categories and at the end of each volume there is an alphabetical listing by author. Volume I lists a total of 676 titles while Volume II has a total of 1124. The Northern Mississippi Valley, the geographic region that includes Wisconsin, had 35 entries in Volume I and 50 in Volume II.

Copies of each volume may be ordered, at $3.50 each, from the Society for American Archaeology, 1530 P Street, N. W., Washington 5, D. C. A more economical way to be certain to get ABSTRACTS OF NEW WORLD ARCHAEOLOGY each year is to join the Society for American Archaelogy. The annual dues of $8.00 gives members a subscription to the quarterly journal, AMERICAN ANTIQUITY, the annual volume of ABSTRACTS OF NEW WORLD ARCHAEOLOGY, and occasional MEMOIRS as issued. Applications for membership may be obtained from the Secretary of the Society (Dr. Joe Ben Wheat, University of Colorado Museum, Boulder, Colorado) or from this reviewer.

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ERRATUM:

On page 42, line 11 of EFFIGY MOUND BURIAL article in the June, 1962 issue the "W" should be changed to an "N".

Interesting Wisconsin Specimens

— Left —

PLAINVIEW - TYPE POINT

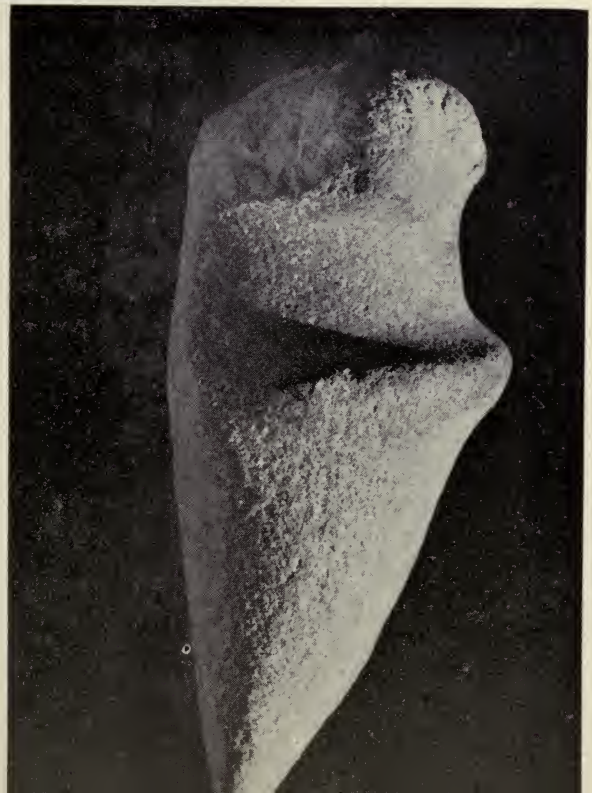
From Mayville area, Dodge County. Dr. E. G. Bruder Collection.

Ripple - flaking and shape similar to the Plainview points of Southwestern U. S.

— Below —

GROOVED ADZE

Such adzes, with the flat rear surface, are rare for Wisconsin. From the Horicon Marsh area. M. S. Thomson Collection, Sheboygan.



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DECEMBER, 1962 Vol. 43, No. 4 (New Series)

THE WISCONSIN ARCHEOLOGIST

A RAVEN HEADDRESS FROM SAUK COUNTY, WISCONSIN, Warren L. Wittry 87

THE SENATOR LAKE SITE, Roger Sperka 94

PREHISTORIC WORKS IN DODGE COUNTY, WISCONSIN, Dr. E. G. Bruder 107

PREHISTORIC EARTHWORKS NEAR MONTELLO, WISCONSIN, Dr. E. G. Bruder 108

THE BOOKSHELF 111

INTERESTING WISCONSIN SPECIMENS 121

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THE WISCONSIN ARCHEOLOGIST

New Series

MILWAUKEE, WISCONSIN, DECEMBER, 1962

Published Quarterly by The Wisconsin Archeological Society

A RAVEN HEADDRESS FROM SAUK COUNTY, WISCONSIN

Warren L. Wittry

Cranbrook Institute of Science

From earliest times Indians utilized birds for a variety of purposes. The flesh was eaten; bones were made into implements, ornaments and ceremonial objects; and feathers were used for headgear, fans, and straightening the flight of arrows. Whole bird skins were incorporated into hunting, medicine, and war bundles. Even bird claws were put to both utilitarian and decorative purposes. Probably most of the species available were utilized in one way or another and it would be an interesting study indeed to review all of the ways in which birds figured in the everyday life and special occasions of the Redman.

This note describes an archeological discovery of a raven headdress which was found with a burial in a mound. The initial digging and discoveries were made on August 16, 1959, by Clement Thering on his farm near Plain. His brother, Paul Thering of Madison, reported the find to me on August 23. The report was intriguing and, it being a Sunday, Paul Thering and I decided to bundle our families into cars and drive to the Clement Thering farm.

Clement Thering showed us a human skull and the artifacts described below. He reported that trespassers had removed portions of the skeleton which he had since recovered and reburied in the mound.

It seemed worthwhile to record as much information as possible about this unique discovery so, taking some tools and a notebook, the expedition, now totaling about sixteen by the addition of the local Therings, proceeded to the site.

The mound was on the summit of a high hill which is clearly shown on the Richland Center quadrangle map in

the NE ¼, Sec. 6, T9N, R4E. It was a small mound and apparently a solitary one. The local residents did not know of any others in the vicinity. The diameter was only 12.0 feet and the height 1.5 feet above the old humus which formed the mound floor. There was a well-defined circular depression immediately surrounding the mound, obviously the source of the fill. The soil was very rocky and upon first

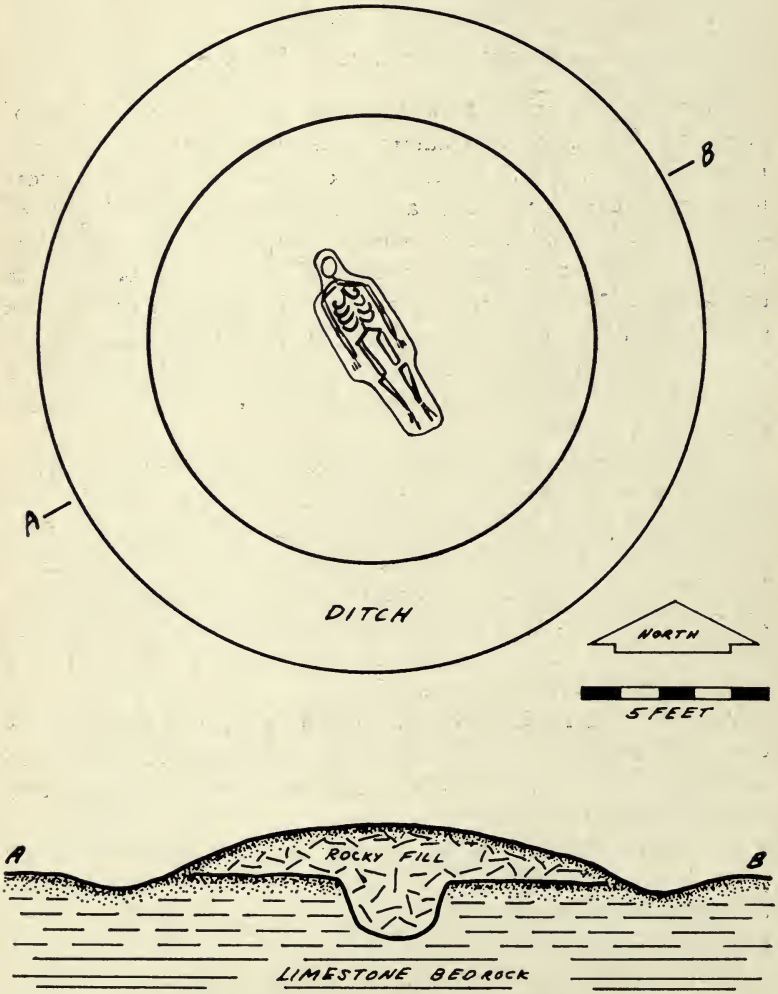

FIG. 1. Plan and profile of the mound on the Clement Thering farm.

observation it appeared that we might be dealing with a rock mound. However, the digging of a few test pits several yards away from the mound also revealed rocky soil. There were, perhaps, more rocks in the mound due to the fact that a subfloor grave had been dug prior to mound construction, the lower 0.5 foot of which penetrated the partially disintegrated limstone bedrock.

Our work at the site consisted of cleaning out the backfill of the recent excavations and again recovering the postcranial skeleton of an individual. All of the major bones were rediscovered and only a few of the small bones were not recovered. The recent digging had not completely cleaned out the original fill of the grave. We proceeded to do this, exposing a pit with a total depth of 1.5 feet below the original surface (3.0 feet below the mound summit) and shaped in outline as indicated in Figure 1.

The pit was 5.9 feet long and oriented slightly north of northwest. Clement Thering reported that the skeleton was fully extended on its back with the head at the northwest end and the arms extended at the sides. We found toe bones **in situ** at the southeast end. He also reported the remains of a fire on the chest of the skeleton. We found fragments of charred wood in the undisturbed parts of this area of the grave; later slight traces of burning were noted on the bones of this part of the skeleton. Evidently this was a burial in the flesh, which had had a fire kindled upon the chest before being covered with rocky earth fill. All of Clement Thering's statements checked out in the field and are accepted by the writer.

Subsequent study of the bones indicated that the burial was of a male, very close to sixteen years of age as indicated by the development of the molar teeth and differential fusion of the epiphyses. There were no obvious indications on the bones of the cause of death.

In the abdominal region of the burial, located "as if they had been swallowed" but "under the skeleton," were a concentration of chert flakes, a few chert artifacts, and a single unworked deer toe bone. Recovered by Thering were 65 flakes, including a few that had been utilized, averaging 25 mm. in maximum dimension; a drill, 48 by 14 mm. (Fig. 2A);

a well-finished triangular projectile point, 24 by 16 mm. (Fig. 2B); and a crude point made from a flake, 20 by 18 mm. (Fig. 2C). All of these specimens are of chert native to southwestern Wisconsin.

The artifacts associated with the skull are most interesting and are interpreted as parts of a remarkable headdress. Their exact positions in the earth are not known but it is reported they lay directly on the skull. The artifacts included 2 disc ornaments of mussel shell, the anterior portions of 2 skulls of the northern or common raven (**Corvus corax**), and 2 pairs of carpometacarpal bones of the same species and undoubtedly from the same individuals as the skulls. The raven was originally native to the entire state, but is now largely con-

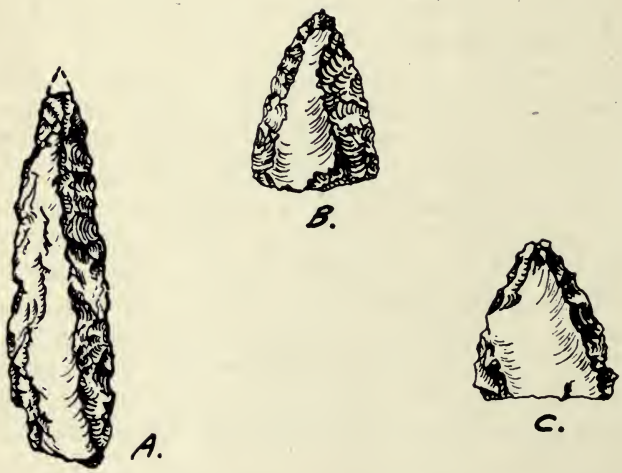

FIG. 2. Artifacts found in the concentration of chert flakes in the abdominal region of the burial. A, drill. B, C, projectile points. Full size. (Not illustrated are 65 chert flakes and a deer toe bone found with the above.)

FIG. 3. Shell disc ornaments found on the skull of the burial. Full size.

fined to the northern quarter, although it may appear in the southern part during winter.

Each of the shell ornaments had a central perforation, 3 mm. in diameter. The smaller one (Fig. 3A) is 18 mm. in diameter and has a serrated edge; the larger (Fig. 3B) is 20 mm. in diameter and has seven points around its circumference.

The carpometacarpal bones show little modification. The ends of the pisiform processes had been cut or ground off the bones of one pair, probably belonging to Head 1. On all four bones, the articular facets (the carpal trochlea at the proximal end and the digital facets at the distal end) appear more bleached than the rest of the bones. Since no other wing bones were recovered, we conclude that these bones, to which are attached the large primary wing feathers, are the remains of four fan-like sections of wings and were incorporated into the headdress along with the shell ornaments and raven skulls.

Both skulls had the entire braincase removed, although in a different manner in each case. Whether or not part or all of the scalp or even some adjacent areas of skin were left attached to the anterior portions is not known. It is probable, however, that at least enough soft parts were left on each specimen to keep the mandible secure in its normal relationship to the maxillary. Each of the two specimens was perforated as a means of attachment to some other object which we conjecture was a headband, skullcap, or something

FIG. 4. Raven skulls found on the skull of the burial. Head 1, left, length 82 mm. Head 2, right, length 100 mm. (Not illustrated are 2 pairs of raven carpometacarpal bones also found on the skull of the burial.)

similar which formed a foundation for the headdress but which was composed of perishable material.

Head 1 (Fig. 4) was cut on a plane perpendicular to the axis at the point where the nasal and frontal bones meet. Part of the ethoid bone was removed, probably as a result of the manner in which the skull was attached to the headdress. The proximal ends of the right quadratojugal (left accidentally broken off), palatine, and mandible were cut off. Knife marks are evident on all cuts. This head was probably attached to the headdress by being tied through holes in the nasal bone. An attempt to indicate how this may have been done is shown by the white cords in the figure.

Head 2 (Fig. 4) was cut through the nasal bone close to its juncture with the maxillary. The mandible was left intact except for two pierced holes for attachment. The hole on the right side had been pierced from the outside in a downward direction; the one on the left side, from the inside in an upward direction. The palatine bones remain intact. The end of the right quadrotojugal is cut while the left bone of this skull was also accidentally broken off.

Discussion

Because I did not see the artifacts **in situ,** I shall not attempt to reconstruct this raven headdress. Two heads and four wing fans from a bird the size of a raven would provide enough covering for all or most of the top of the person's head. Without knowledge of the exact positions of the shell discs, raven heads and wing bones on the skull of the burial, and with no indication of the amount or nature of perishable materials incorporated in the headdress, the form is a matter of conjecture. It is reasonable to assume, however, that it was a very imposing article and that it probably denoted a person of some standing despite his youthfulness.

A similar discovery of a raven skull associated with a burial was made by Robert T. Bray (1961) at the Flynn site, on Orr focus Oneota extra-village type of cemetery area. This cemetery was partly exposed during road building operations in Allamakee County, Iowa. Trade materials in the form of glass beads, iron, and copper or brass artifacts indicate a temporal placement in the early historical period. The raven skull was found just above the right shoulder of

Burial No. 1. The braincase had been removed in a manner similar to Head 1 described above, but the cut was made farther back, leaving the eye orbits intact. A shell disc bead with a central perforation was found within the left orbit of the skull and another bead was found nearby. Although Bray interprets this raven skull as remains of a medicine bag, it is possible that it had been dislocated from an original placement on the head of the burial. Of course, I do not have positive evidence that the raven skulls found with the burial of the Thering farm were directly on the skull either, but I am willing to accept Mr. Thering's statement that they were. The perforations, apparently for attachment, are additional evidence for the headdress interpretation. It seems likely, in the light of the Flynn cemetery data, that the shell disc ornaments from the Sauk County find may also have been placed over the eyes of one of the ravens. It is also possible that they were buttons attached to the headdress.

Two of the ten burials described for the Flynn site were accompanied by caches of chert flakes. This trait is reported by Mildred Mott (1938: 298) as occasionally occurring in Orr focus burials in Allamakee County.

A serrated bone disc, similar in appearance to one of the shell discs from the Sauk County find, came from Feature 7 of the Carcajou site in Jefferson County, Wisconsin. This feature also contained the only sherd of **Midway Incised**, an Orr focus type, found at the Carcajou site (Hall, 1962: 43, personal communication). This feature is interpreted as containing later materials than the bulk of the artifacts of this site.

While occasionally Orr focus burials were made intrusive into Woodland mounds in Allamakee County, Iowa, there are no reported Orr focus burials in Iowa or Wisconsin which were made inclusively in mounds. Nonetheless, the small amount of evidence available indicates that the mound burial reported here is most likely of the Orr focus of the Oneota aspect and probably dates from late prehistoric or early historic times.

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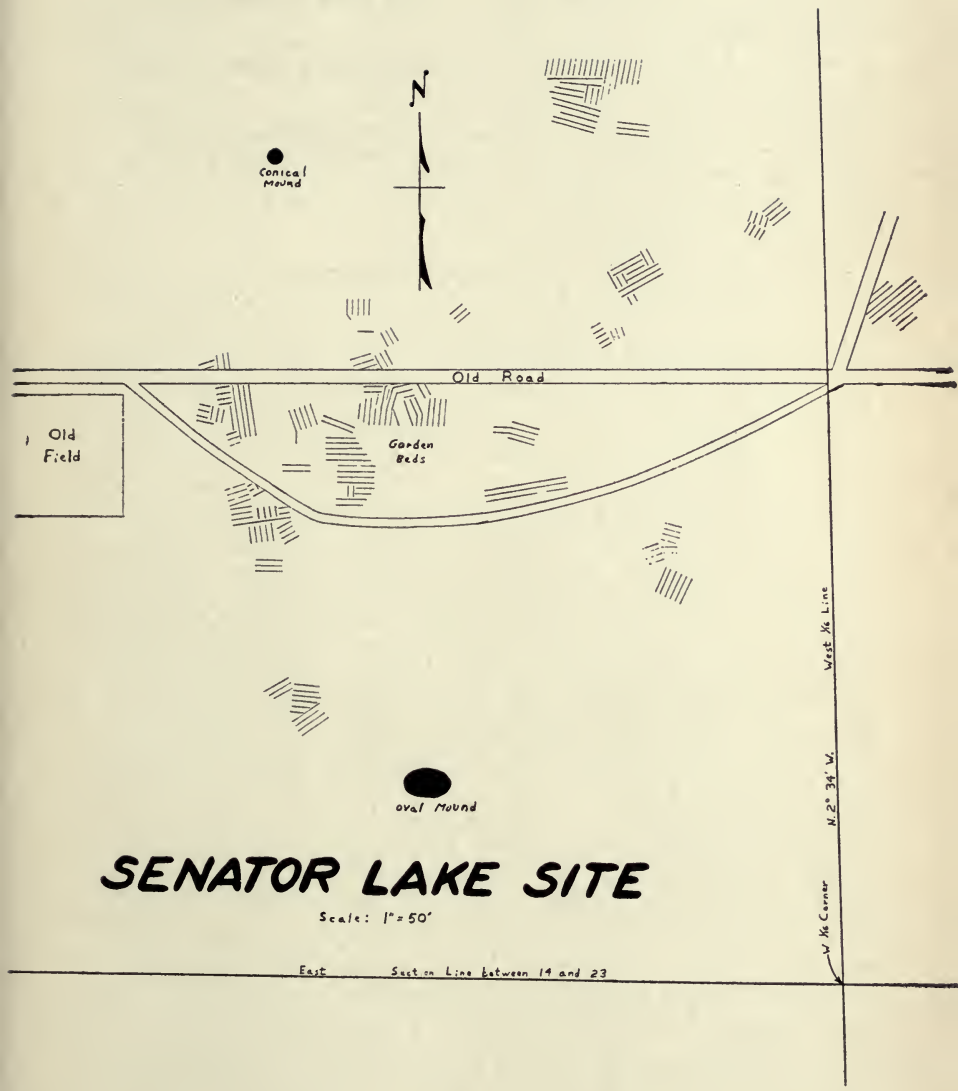
THE SENATOR LAKE SITE

Roger Sperka

The Senator Lake Site is located in Marinette County, 13 miles west of Crivitz, Wisconsin (Section 14, 22 and 23, T. 32 N., R. 18 E.). The site is composed of a campsite, and 228 linear ridges, representing garden beds, 1 oval and 1 conical mound. All of the mounds are in the SW quarter of the SW quarter of Section 14, except for 9 linear mounds which are in the SE quarter of the SW quarter of Section 14.

My attention was first called to the site in 1956 when several projectile points were found by a friend on the north side of Senator Lake. Most of the shore line on the north side of the lake was bulldozed, plotted and sold to individuals. The newly disturbed earth proved to be productive for several years until vegetation again claimed the campsite. In an effort to learn more about the site I undertook an excavation of the oval, conical and several of the garden bed ridges.

The shore of Senator Lake on the north side is sand but the southern end is a swamp which is 11.5 miles long and 2.5 miles wide. The swamp lies in a general north-south direction and at the southern end of the swamp there is a large outcropping of granite. Only the north shore of the lake had the ground disturbed enough to make surface hunting possible. All of the artifacts found were at a distance from the lake and it was believed from this that the water level was much higher at the time of occupation. In order to try to prove this a rough survey was made along the west side of the swamp for possible campsites. Along the edge of the swamp



SENATOR LAKE SITE

Scale: 1" = 50'

were several logging camps and logging roads where the ground had been disturbed. All of the spots that were checked turned up flint chips, and fire-cracked stones, but projectile points, pottery and other signs of habitation were found only on the north and northwest side of the lake and swamp near the mound group. Included in this check were two small creeks that flow into the swamp. The larger one at the south end of the swamp, West Branch of the Peshtigo Brook, turned up only flint chips. A small unnamed creek at the north end, which sometimes dries up in the summer, proved to have been occupied.

In the main body of the swamp the water varies from one to three feet deep, but there are several knolls which are a few feet above water. These knolls were checked for possible evidence that they had been visited at some time, but in all cases they were found to be sterile and from the sand stratification they appeared to have been below water or existed as a sand bar.

The site has yielded only three copper artifacts. A conical point (32.5 mm. x 8.5 mm. dia.), a copper spatula (30.5 mm. x 5.0 mm. x 2.5 mm.), item 1 and 2 in Table II, and a stemmed spearpoint (103 mm. x 27 mm. x 4 mm.) which was found by another person. The conical point and stemmed spearpoint were found as surface finds along the lake while the copper spatula was found in the fill of the oval mound and is not attributed to the Old Copper Culture. As of the present time this is the only evidence that the site was occupied by the Old Copper Culture.

In my collection are 1 Old Copper point, 24 Woodland points, 12 triangular points and 18 unidentified fragments from the site. To my knowledge 1 Old Copper point, 5 Woodland points and 5 triangular points have been found by other collectors. The distribution between Early Woodland, Late Woodland and triangular points are about equal while the representation of the Old Copper Culture is much lower.

An interesting type of projectile point was found as surface finds in this site and are items 13 and 14 in Table I. The stems of both points show a very great resemblance to Scottsbluff Type II and both points show evidence of basal grinding.

It was noted that items 12, 14, 28, and 29 in Table I and items 3 and 5 in Table II were made of a white chert which is not native to this area. The artifacts of this material were of both Early Woodland and triangular points. Also noted was that items 2, 6, 8, 11, 21, 23, 30 and 54 in Table I were chipped from milky quartz. Five of the points (items 2, 6, 8, 11 and 21) were from Early Woodland, one (item 30) was triangular and two (items 23 and 54) were unidentified. Several of the points (items 2, 8, 11 and 54) were chipped from milky quartz which also contained rock crystal, while the remainder (items 6, 21, 23 and 30) appear to be from local material. This would appear to indicate that quartz crystals were used by the Early Woodland people for the manufacture of their projectile points. To support this evidence quartz chips on which the natural facets of the crystal could be seen were found on two occasions. The nearest spot at which such crystals could be obtained would be McCaslin Mountain which is the head waters of the north branch of the Thunder River, a tributary of the Peshtigo River.

On the north side of the small unnamed creek a spot about 8 feet in diameter was found where the sod and first several inches contained charcoal, fire-cracked stones, flint chips and a few traces of pottery which contained almost no temper except for a few traces of grit. Scattered through this was a large quantity of bones of excellent preservation, all of which had been cracked for the marrow. The bones appeared to be mainly from deer and large birds. Uncovered in this was a small triangular point. Item 25 in Table I.

The site produced several rim sherds as surface finds. While the rim sherds taken from the oval mound contained inside decoration none of the specimens from the campsite along the lake contained inside decoration. All specimens were grit-tempered.

The campsite also produced 4 hammer stones which are listed in Table II.

The oval mound is located about 600 feet north of Senator Lake. It is built on a slight slope facing the lake. In the winter one can see over the lake and swamp and in the distance the granite outcropping is visible. The bearing of the mound is due east-west and it measures 42.5 feet in length,

25.5 feet in width and 2.8 feet in height, measured from the sterile sand. The mound was laid out in 5 foot grids and the entire mound was removed. The upper layers were shaved, but all of the lower levels were troweled. After the excavation the mound was reconstructed.

A central pit was located 14 feet from the north edge and 23 feet from the west edge of the second stage. Before the pit was dug the sod was removed exposing sterile white and red sand which contained traces of gravel. The pit was 3.0 feet in diameter and 1.3 feet deep. The fill taken from the pit was thrown to the south and only a slight attempt if any was made to level it out. Laying upon this sand was a grit-tempered rim sherd which contained cord-marked impressions on the inside of the rim. Over the pit and surrounding surface was a layer of red ocher. Upon the red ocher was a layer of sand, humus and charcoal 0.3 feet thick. The fire layer was covered over with another 0.3 foot layer of red sand. A careful search was made of these strata in hope that some evidence of a burial would be found, but no caps from the teeth or burnt fragments from a cremation were found.

Located 9.7 feet from the central pit at a bearing of N. 65° E. was a pit and fireplace. See figure 2. The fireplace was 2.0 feet in diameter and 0.25 feet deep. The pit was filled with sand and charcoal and upon the top of this was placed a small rock. Below the fireplace was a pit 0.7 feet in diameter and 1.3 feet deep. The pit had been lined with small rocks and the soil in the pit was very loose in texture. The sail appeared to be red sand which had filtered into the pit, but it was discolored by organic matter.

Another pit and fireplace was located 8.8 feet from the central pit at a bearing of S. 65° W. The fireplace was also 2.0 feet in diameter and 0.3 feet deep. The pit was also filled with sand and charcoal and contained a small rock on the top of the filled fireplace. Below the fireplace was a pit 0.7 feet in diameter and 0.7 feet deep which was filled with charcoal.

The next layer covered all of the pits and formed the prepared floor of the mound. The layer averaged 0.2 feet in thickness and was composed of dark sand containing large

quantities of charcoal and small traces of white sand which was attributed to the extreme heat of the fire. Upon this was a layer of red sand 0.2 to 0.4 feet thick. This was followed by a layer of sand, humus and charcoal 0.3 to 1.0 feet thick. The concentration of charcoal was lower than in the prepared floor. The next layer was 0.2 to 0.3 feet of red sand which was again followed by a 0.2 to 0.8 foot layer of sand, humus and charcoal. This completed the first stage of construction, and the mound at this point measured 31.0 feet in length, 18.0 feet in width and 2.0 feet in height, measured from the sterile sand.

Located 11.5 feet from the north edge and 12.5 feet from the west edge of the second stage was another pit. This pit was 4.0 feet long, 3.0 feet wide and extended through the stratified first stage to a depth of 2.3 feet from the top of the first stage. This placed the pit 0.9 feet below the prepared floor. The orientation was N. 65° E. which was the same as the three pits in the first stage. Also like the central pit it was lined with red ocher. At the level between the first and second stages a crudely chipped celt was found measuring 124.0 mm. long, 77.5 mm. wide and 37.0 mm. thick. See item 11 in Table II. Due to its close relation to the pit it seems probable that this was the instrument used to dig the pit and that it was abandoned after it had served its purpose. The pit contained two bundle burials, an adult and a child. The tightly bound bundle of the child, skull of the adult and the major bones of the adult were orientated in the direction of the pit. The skull of the adult was placed upright and facing the northeast. The adult burial showed no signs of binding, although the bundle of the child would have had to be bound because of its compactness. The adult was a male and the vertebrae showed evidence of advanced stages of arthritis. The cranial index of the adult was 69. No determination of sex was made for the child and since the cranium had not fused it was impossible to measure the cranial index at the present. No grave goods were found associated with the burials, except for a small pottery fragment with the child, which very likely came from the fill.

Over the burial pit was a single layer of sand which completed the second stage. The soil used to build this stage

seems to have been scraped up from the surrounding area. The fill from this stage also contained charcoal, but the concentration was lower than that from the first stage and the color of the soil was also lighter.

On the north side of the mound this stage yielded large concentrations of grit-tempered pottery, but only small fragments were found elsewhere if any. One specimen had a collared-rim which contains cord-marked impressions on the inside of the rim. Another fragment from the same specimen contained two drill holes for repair. Two specimens with inside decoration were found which did not have collared-rims.

On the south side of the mound a small copper spatula was found in the second stage fill. See item 2 in Table II.

Samples of charcoal were taken at random throughout the fill and sent to the Forest Products Laboratory for identification. All of the samples were identified as red pine (Pinus resinosa). Also identified was a small fragment of bark from a paper birch (Betula papyrifera) taken from the second stage of the mound.

The conical mound is located at the northwest corner of the group. The mound was about 15 feet in diameter and 2.0 to 2.5 feet in height. No accurate measurements could be made because the majority of the mound had been leveled by a bulldozer when the garden was being extended.

In the center of the mound was a pit measuring 5.5 feet in length, 3.5 feet in width and 0.7 feet deep. The pit was orientated at a bearing of N. 30° E. and the sod line had been removed. Unlike the oval mound there was no red ocher in this pit. In the southwestern end of the pit was a multiple bundle burial which consisted of three individuals, two adults and a child. The cranial indices of the adults were 77 and 74. The long bones of the burial were generally orientated at a right angle to the length of the pit. The articulation of a femur and tiba were noted. Also in the center of the bundle a rib was found passing through a cervical vertebrae. Located in the northeastern end of the pit was a single bundle burial of an adult. The cranial index was 66. Again the long bones were generally orientated at a right angle to the pit and also a rib was again found passing through a cervical vertebrae. The bones of this burial were in a poor state of

preservation as compared to the others. No grave goods were found with any of the burials.

The pit and the surrounding area was covered with a fire layer 0.17 to 0.25 feet thick. The fire layer covered an area about 7.5 feet by 11.0 feet and was orientated in the same direction as the pit beneath. Upon this was a single layer which was scraped from the surrounding area. Although it cannot be positively stated, because of the earlier destruction, it appears to have been unstratified. Several samples of charcoal were taken from the fire layer and the above fill. All of the samples were identified by the Forest Products Laboratory as white pine (Pinus strobus).

In talking to Mr. Joe Plush, who was present when the field (see figure 1) was first plowed, I learned that projectile points and several burials were uncovered. The field was checked for artifacts and two points and a drill were discovered within 10 feet apart. See items 4 and 34 in Table I and Item 3 in Table II. At this place a test trench was dug and all the sand was screened. The trench yielded only several pottery sherds and flint chips. The field had been plowed to a depth of 0.7 feet. Another trench was dug between the field and the small linear mounds located east of it, but they were sterile.

A test trench was dug through a group of three garden bed ridges located northeast of the oval mound. The cross section showed that the ridges were much higher than they are now, but they have been leveled by the leaves piling up in the depressions between them. The red sand layer contained pottery fragments, charcoal and flint chips. All of the pottery fragments were broken into small pieces and the edges were rounded. In the north wall of the trench at a depth of 0.8 feet a new type of pottery for this site was found. The specimen was grit-tempered, but the surface was smooth. The rim was produced by folding and forming an angle of 105° with the body, measured between the outside of the rim and the outside of the body. A body fragment was also found which formed an angle of 145°, measured between the inside surfaces, and is believed to have come from the side of the vessel. The excavation was continued until sterile sand was uncovered. Several other small linear mounds were trenched,

but in all cases they only contained charcoal and sometimes pottery fragments and flint chips. The red sand contains a large number of small stones and the concentration increases with depth until at 3 to 4 feet it has changed to gravel and a coarse sand. The length of the mounds varied greatly, but the width was always constant at 5.5 feet. The height varied between 0.25 to 1.0 foot.

Summary and Conclusion

The oval and conical mound were attributed to the Effigy Mound Culture. In the case of the oval mound it may be stated that the original purpose of the mound was not for burial purposes and the three pits indicate that they had contained some type of perishable goods. The use of red ocher and orientation of the burial pit of the oval mound would seem to indicate that they were made by the same people as those who built the first stage. Also to support this is the fact that the cephalic index agrees with that given by Dr. Rowe. All of the pottery taken from the mound appears to be from the Effigy Mound Culture, but that from the first stage has a straight rim, while that from the second stage is collared and flared out. Therefore, the time between the two stages would have had to be short enough so that the use of Red ocher and orientation of the pits was not lost and yet long enough for the pottery to show a change. This is assuming that both stages were built by the same group of people. Since it is believed that the Woodland people traveled in nomadic bands it is possible that the first stage and burial was from one group while the second stage was from a later group. This is possible since the mound had been pitted at an earlier date and another burial might have been destroyed. The disturbed area was between the burial pit and the central pit. The conical mound was believed to have been unstratified while the oval mound was stratified. The cephalic index of the single burial was in the range given by Dr. Rowe, but those from the three bundle burials were at the limit and a little above it. Because of the absence of stratification, red ocher, and care taken in placing the burial in the pit it is believed that the mound is more recent than the oval mound and possibly represents the end of the Effigy Mound Culture in this area. Since the single burial was in a poorer

state of preservation than the others and was isolated from the rest it seems that the burial had been exposed to the elements for a longer time. In the group of three it was noted that the bones were still articulated. Also since burials had been uncovered in the old field at very shallow depths it is possible that the single burial had been found by the builders of the mound and entered with the others. This would account for its poor preservation, isolation and difference in cephalic index.

The linear ridges are believed to be garden beds. This was indicated by the absence of burials, small and worn edges of the pottery fragments found which would indicate that the soils had been worked. The type of pottery found with the mound would place them as very recent. An attempt was made to determine some sort of pattern in their arrangement, but none was found except that they usually meet at or very close to right angles and that their width was always constant while the length and height varied.

The area in the old field which yielded pottery fragments, two projectile points, one drill and other material at a much earlier date is believed to be a campsite. The large pottery concentration in the north side of stage 2 of the oval mound as compared to that of the south side seems to indicate that another campsite was once located between the oval mound and the garden beds and may have been extended farther north before the garden beds were built. All of the material found would seem to indicate that these two campsites would fall in the Effigy Mound and Late Woodland period.

The survey of the sand stratification in the knolls of the swamp indicate that the water table was about two to three feet higher during its early occupation. The pottery specimens found along the edge of the lake are from Early Woodland, except for that by the small unnamed creek which is believed to be very recent. None of the pottery specimens were from the Effigy Mound Culture and Late Woodland, but the area did yield projectile points from Old Copper times to that of Late Woodland. As noted before the campsite from the Effigy Mound Culture and Late Woodland was located farther from the lake and near the mound group.

TABLE I

Item No.	Spec. No.	Blade Shape	Stem Shape	Base	Notches	Basal Grinding	Maximum Length	Maximum Width	Maximum Thickness
1	102	Convex	Expanding	Concave	Side	Present	28.5 mm	19.0 mm	4.5 mm
2	97	Convex	Straight	Straight	Corner	Present	(25.0 mm)	16.0 mm	7.5 mm
3	10	Convex	Straight	Straight	Corner	Present	(41.5 mm)	22.5 mm	7.0 mm
4	68	Convex	Straight	Convex	Corner	Absent	49.5 mm	31.5 mm	9.5 mm
5	23	Recurved	Straight	Convex	Corner	Absent	47.0 mm	23.0 mm	8.5 mm
6	13	Convex	Straight	Convex	Corner	Present	27.0 mm	15.5 mm	6.0 mm
7	91	Convex	Expanding	Convex	Corner	Absent	39.0 mm	26.5 mm	6.0 mm
8	26	———	Straight	Straight	Corner	Present	(16.5 mm)	(18.5 mm)	(10.0 mm)
9	78	———	Expanding	Convex	Corner	Present	(16.5 mm)	(17.0 mm)	(6.0 mm)
10	42	Convex	Expanding	Straight	Corner	Absent	39.5 mm	24.0 mm	10.0 mm
11	27	Convex	Expanding	———	Corner	Present	(30.0 mm)	(14.0 mm)	5.5 mm
12	101	Convex	Expanding	Indented	Corner	Present	36.5 mm	27.0 mm	8.0 mm
13	73	———	Expanding	Straight	Corner	Present	(20.0 mm)	(34.0 mm)	(8.0 mm)
14	22	Convex	Expanding	Convex	Corner	Present	35.0 mm	31.0 mm	10.0 mm
15	53	Straight	Contracting	Straight	Corner	Present	24.5 mm	19.5 mm	6.0 mm
16	108	Convex	Contracting	Convex	Corner	Absent	40.5 mm	23.0 mm	10.5 mm
17	9	Convex	———	———	Corner	———	(50.0 mm)	36.0 mm	9.0 mm
18	84	Convex	———	Straight	Corner	Absent	55.0 mm	24.0 mm	11.0 mm
19	14	Convex	———	———	Corner	———	(26.0 mm)	20.0 mm	6.5 mm
20	20	Convex	———	———	Corner	Absent	(27.5 mm)	19.0 mm	7.0 mm
21	131	Straight	———	———	Corner	Present	(73.5 mm)	26.0 mm	8.0 mm
22	130	Convex	Contracting	Convex	Corner	Present	64.0 mm	33.5 mm	7.5 mm
23	126	Convex	———	———	Corner	———	(18.0 mm)	19.0 mm	5.0 mm
24	125	Convex	———	———	Corner	———	(30.5 mm)	(23.5 mm)	(7.5 mm)
25	121	Convex	None	Straight	None	Absent	12.0 mm	10.5 mm	3.0 mm

29	30	Convex	None	Straight	None	Absent	(25.5 mm)	20.0 mm	4.5 mm
30	31	Convex	None	Straight	None	Absent	28.5 mm	14.0 mm	4.0 mm
31	113	Straight	None	Straight	None	Absent	(17.5 mm)	(13.5 mm)	3.5 mm
32	72	Straight	None	Concave	None	Absent	21.0 mm	19.0 mm	4.5 mm
33	81	Straight	None	Concave	None	Absent	18.0 mm	15.0 mm	3.5 mm
34	70	Straight	None	Concave	None	Absent	18.5 mm	13.5 mm	3.5 mm
35	29	Convex	None	Straight	None	Absent	20.0 mm	14.0 mm	3.5 mm
36	75	Convex	None	Convex	None	Absent	18.0 mm	12.5 mm	2.5 mm
37	98	———	———	———	———	———	(26.0 mm)	(26.0 mm)	(8.0 mm)
38	19	———	———	———	———	———	(14.0 mm)	(20.5 mm)	4.0 mm
39	18	Convex	———	———	———	———	(18.5 mm)	17.5 mm	4.5 mm
40	28	Convex	———	———	———	———	(30.0 mm)	(22.0 mm)	(3.5 mm)
41	89	Convex	———	———	———	———	(28.0 mm)	22.0 mm	(6.0 mm)
42	82	———	———	———	———	———	(16.0 mm)	(17.5 mm)	(5.0 mm)
43	111	Convex	———	———	———	———	(14.0 mm)	(11.5 mm)	(3.0 mm)
44	25	Straight	———	———	———	———	(19.0 mm)	(15.0 mm)	3.5 mm
45	71	Convex	———	———	———	———	(18.0 mm)	(16.0 mm)	(3.5 mm)
46	104	Convex	———	———	———	———	(22.0 mm)	(13.0 mm)	4.5 mm
47	74	Straight	———	———	———	———	(13.0 mm)	(10.5 mm)	2.5 mm
48	107	Convex	———	———	———	———	(18.0 mm)	(13.0 mm)	(5.0 mm)
49	109	Straight	———	———	———	———	(11.0 mm)	(11.0 mm)	(2.0 mm)
50	99	Convex	———	———	———	———	(15.0 mm)	(11.0 mm)	(4.0 mm)
51	100	Convex	———	———	———	———	(19.0 mm)	(14.5 mm)	3.5 mm
52	49	———	Expanding	Convex	———	———	(7.0 mm)	(12.5 mm)	(4.0 mm)
53	50	———	Straight	Convex	———	———	(9.5 mm)	(13.5 mm)	(4.0 mm)
54	51	Convex	———	———	———	———	(7.5 mm)	(11.5 mm)	(4.0 mm)

( ) — indicates that the specimen is broken

TABLE II

Item No.	Spec. No.	Artifact	Maximum Length	Maximum Width	Maximum Thickness
1	21	Conical Point	32.5 mm	8.5 mm	8.5 mm
2	122	Copper Spatula	30.5 mm	5.0 mm	2.5 mm
3	69	Drill	(35.0 mm)	(11.5 mm)	6.5 mm
4	11	Flint Blank	37.0 mm	23.5 mm	10.0 mm
5	11	Flint Blank	48.5 mm	29.0 mm	12.0 mm
6	106	Scraper	29.0 mm	24.0 mm	3.0 mm
7	47	Hammer Stone	96.0 mm	88.0 mm	79.5 mm
8	54	Hammer Stone	103.5 mm	83.0 mm	71.0 mm
9	48	Hammer Stone	83.5 mm	65.5 mm	61.0 mm
10	46	Hammer Stone	51.0 mm	43.5 mm	36.5 mm
11	121	Celt	124.0 mm	77.5 mm	37.0 mm

( ) — indicates that the specimen is broken

The finding of the two points which bear resemblance to Scottsbluff Type II would push the sites occupation back farther, but since item 13 was broken and item 14 appears to have been reworked it is possible that they were found elsewhere and brought into this area. It would be interesting to know the location of the white chert quarry which was used by the Early Woodland people.

Triangular points are usually attributed to the Upper Mississippi Culture and on occasions to the Effigy Mound Culture. This site yielded triangular points, but no artifacts to indicate that it had ever been occupied by the Upper Mississippi Culture. Since some triangular points were made of white chert and quartz, which was used exclusively by Early Woodland people in this site except for the fragments of points which could not be identified and the one which resembles Scottsbluff, it seems that their use may predate the Effigy Mound Culture. Further exploration of this area may yield evidence of this.

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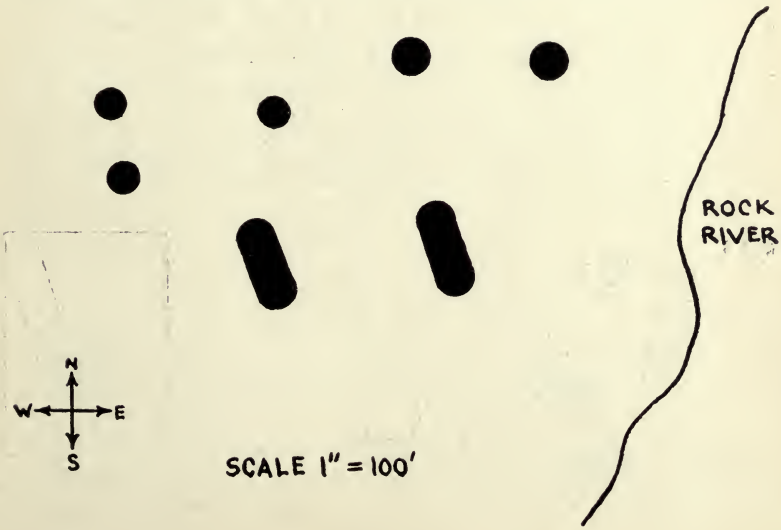
PREHISTORIC WORKS IN DODGE COUNTY, WISCONSIN

Town of Hubbard

Dr. E. G. Bruder

These earthworks consist of five conical and two linear mounds located on a large, glacial till hill, flanked by the Rock River on the east and on the south. To the north and south of the mounds are cottages on lands taken up in 1896 by the Juneau Sportsmen's Club. At this time in the heavily wooded area on the east bank of the Rock River was the encampment of about three hundred Winnebago squatters. The land prior to 1836 belonged to the Potawatomi, who fiercely guarded the lands on the east side of the Rock River. After their removal, the remaining Winnebago took over the favored east side, and lived there until the lands were taken up by white settlers, who permitted the Indians to live in the uncleared wooded areas. The Rock River opposite these mounds, widens into Lake Sinnissippi, an artificial lake created by the dam at Hustisford. It was the heavily traveled route of the pre-historic Indians, and of the first white settlers into this part of Wisconsin.

Captain Jonathan Carver, English explorer, traveled the Rock River, then through its channels in the Horicon Marsh to the west branch of the Rock River, north to the one and



one-half mile portage to the west branch of the Fond du Lac River (which he named the Marion River). He continued his voyage to its mouth at Fond du Lac, and then up Lake Winnebago, ending his voyage at Green Bay, about 1780.

No other means of travel was open through this originally very heavily wooded area. The prehistoric people often selected this type of scenic spot adjoining a heavily traveled route for their final resting place. The mounds were built on the top of the hill on the side facing the thoroughfare.

None of these mounds have been opened and remain in a good state of preservation. No radiocarbon data has been taken on this type of earthworks in this particular area, but the Kolterman effigy mound group on the lands east of the central part of the Horicon Marsh, Dodge County (Wisconsin Archeologist, Vol. 37, No. 4) gave a radiocarbon date of 776 A. D. (plus or minus 250).

PREHISTORIC EARTHWORKS NEAR MONTELLO, WISCONSIN

Dr. E. G. Bruder

This group of earth works is located in Marquette county on the south bank of the Fox River on the Indian Echoes Resort, grounds now owned by Lyle Adrian. It was the ancestral home of the Winnebagoes Decorah band. Old One-Eyed Decorah was here in the "Winnebago War" in 1829, when three detachments of U. S. troops were ordered to nearby Fort Winnebago at Portage. One came from Fort

Howard at Green Bay, another from Fort Crawford, Prairie du Chien, and the third detachment came from Fort Snelling, Minnesota. This display of force, augmented by artillery, moved the Indians into peaceful behavior. The time for their removal had arrived. Chief Spoon Decorah followed his father, One-Eyed Decorah, and Sam Decorah, son of Spoon Decorah, ended the long line of chiefs on this ancient Decorah homestead.

Mr. Adrian relates how the Winnebagoes come back every summer to their ancestral homesite, bringing bead-work for him to sell for them. One of the Indian women, age 103, told Adrian that she was born there, and that the last village was called "Long Lake." The Indians pointed out the La Crosse field where the ancient games were played. The prehistoric mounds were known to them, but none of the Indians remembered any stories as to their origin. Charred remains of ancient campfire sites are found scattered beyond the mound area. This entire area has the Plainfield sand type of soil, almost sterile, for vegetation, excepting for the large replantings of white pine by Mr. Adrian. This type of soil lends itself to severe erosion by wind and water. The forest area here prevented the destruction of the mounds, but heavy erosion is evident in the adjoining cleared field to the south.

Mound No. 1 is 15 feet in diameter and 5 feet high.
Mound No. 2 is 26 feet in diameter and 4 feet high.
Mound No. 3 is 15 feet in diameter and 4 feet high.
Mound No. 4 is 15 feet in diameter and 4 feet high.

It is a cairn type with very evenly fitted gray-black granite slabs, unusual because the entire surrounding country is covered with heavy out-crops of red granite.

No. 5 is 25 feet in diameter and 4 feet high.
No. 6 is 26 feet in diameter and 4 feet high.

All these mounds are beautifully proportioned and are located in a pine woods. None were ever disturbed.

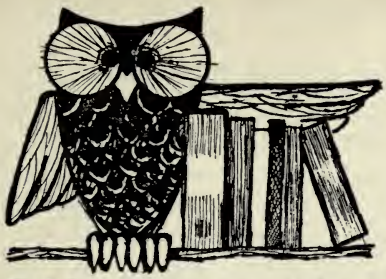
No. 7 Insert is a bear effigy 40 feet long, 25 feet wide at the head, and 20 feet wide at the tail. In grading the road nearby, almost two feet were sliced off the back by the

grader, exposing about eight foot of black muck soil near the bottom of the mound. The rest of the mound is made of the Plainfield sand soil of the surrounding area. It is located about 470 feet west of the main lodge. The bear was not disturbed by any further digging. The original trail passed close by this mound.

No. 8 is a bear effigy about sixty feet long, forty feet wide at the head and thirty-six feet wide at the tail. It shows heavy erosion around the head and neck, because riding horses were allowed to pasture in this field.

No. 9 is a fine bear mound with very little erosion. It is about four feet high, sixty feet long and forty feet wide.

The Fox River, about 400 feet away, is wide and deep and offered plenty of good fishing to the ancients, as well as for today's sportsman. This land lays high, in contrast to the marsh lands nearby. The confluence of the Fox and the Grande Rivers is to the east, a short distance away. The Fox River was the main thoroughfare used by the ancient people, from the Wisconsin River to Lake Winnebago and Green Bay. The U. S. Government maintained a series of locks, to insure an even height of water along its entire length. It is no longer in use, and the locks are in bad condition. To the east of the mounds is the abandoned channel of the Fox River, which changed its course to the left many years ago. Many summer cottages have been built to the north of the Adrian resort, along the west bank of the Fox River. The ancient people had selected a beautiful area for their home-site.



THE BOOKSHELF

By

David A. Baerreis

and

Guest Reviewers

Indian Mounds Park Archeological Site, Rice Lake, Wisconsin by LELAND COOPER; Science Bulletin, Number 6, The Science Museum of The St. Paul Institute, St. Paul, Minnesota, 1959; iv - 50 pp., 10 plates, 1 map, 5 figures, 2 tables. $1.00.

Although published several years ago, this report on the excavation of an Indian mound at Rice Lake in Barron County by Leland Cooper of Hamline University is an important contribution to Wisconsin prehistory. It is the kind of publication that this column was designed to call to the attention of the readers of THE WISCONSIN ARCHEOLOGIST. Professor Cooper, one of our most knowledgable archaeologists so far as northern Wisconsin is concerned, is also versed in the prehistory of Minnesota and is thus eminently qualified to analyze a situation which reveals the linkage between these two regions.

The City of Rice Lake has preserved within its Indian Mounds Park a dozen mounds of a group that numbered fifty-one when it was first described by Cyrus Thomas in 1891 in the 12th Annual Report of the Bureau of American Ethnology. The mounds were predominantly of conical form though two linear mounds were present at one end of the group. Professor Cooper excavated, and subsequently restored, the largest of the surviving mounds at the request of the city Park Board in 1952. While this mound appeared to have been a dumbbell-shaped structure, investigation revealed that it actually consisted of two distinct mounds with overlapping borders. The smaller mound on the southwest overlapped upon the periphery of the one to the northeast and thus is the more recent structure of the two. Cooper indicates that the overlapping of the borders of the mounds was clearly

intentional and speculates that it may have symbolized some close relationship between the persons buried in the two mounds. In view of the established chronological relationship between these two mounds, it is particularly unfortunate that the major portion of the fill of the smaller mound had been removed at some early period making further exploration impossible. The excavation reported in the monograph under review is that of the northeast mound of this twin earthwork, a structure having a diameter slightly under 40 feet and an original height estimated at 7.5 feet.

The author comments that these mounds, as he observed them in a survey made in 1929 and as confirmed by soil profiles revealed by excavation, are relatively high and steep-sided in proportion to their basal diameter. The mounds at the northeast end of Rice Lake, reported by Cooper in a 1933 Milwaukee Public Museum Bulletin, by contrast have a relatively low ratio of elevation to width. Since these latter mounds are attributed to a Middle Woodland period, it is suggested that the relatively steep-sided condition of the Indian Mounds Park group indicates that sufficient time has not elapsed since their construction for erosion to have reduced them extensively. The argument is particularly persuasive since discoveries made in the 1952 excavations indicate that at least the one mound was constructed within the historic period.

Sectioning of the mound indicated that the top soil was cleared from the area prior to mound construction. Two shallow pits, about one foot apart and one foot in depth and located in a central position in relation to the mound. were excavated to accommodate the inclusive burials of the mound. Pit 1, six by four feet in dimensions with flaring sides and rounded corners, is thought to have been the first of the burial pits excavated and perhaps covered for a period prior to the excavation of Pit 2 which was then followed by the construction of the mound proper. Both pits contained multiple bundle burials. Pit 1 contained the remains of five adults and one youth of 10-12 years of age. Pit 2 contained the remains of two individuals. Each of the burials is distinct and

the skeletal parts are fully represented in a semi-articulated relationship. However, since the entire mass of each was so compact, Cooper assumes that the fleshy parts of the body were either desiccated or largely decomposed before the bundling process took place. Despite the compact nature of the bundles, Cooper makes the perceptive observation that the strata over the burial pits give indication of a marked degree of settling. This, he infers, followed upon the decay of the grave contents which must have included a considerable quantity of perishable clothing and grave goods.

After the burial pits were excavated and the burials placed within them, the first layer of the mound consisting of fill of yellow clay and sand was built. This stratum, eight inches to a foot in thickness, had a diameter of 29 feet and thus did not extend to the perimeter of the ultimate mound which had a diameter of 40 feet. Immediately above this was a compact layer, varying in thickness from one inch to one foot and 19 feet in maximum diameter which was heavily charged with charcoal and ash and contained areas of reddened earth where fires had been built. One such area was immediately above Burial Pit 2 and one of the long bones of this feature which protruded up into the stratum had been slightly charred on the exposed end. It is thus clear that ceremonial practices of some character involving the use of fires are revealed by this particular level. The remainder of the mound was of a homogeneous character, though containing considerable village debris, suggesting the completion of the construction of the mound with a mantle of substantial thickness. Within this latter layer the remains of one additional bundle burial was encountered but due to recent disturbance it could not be determined whether it was inclusive in the upper layer or inserted into it.

The mound fill was screened as it was removed, a procedure which resulted in the recovery of 13 chipped stone implements and 817 potsherds. Since such materials are accidental inclusions from the area of village occupation, they are not necessarily contemporary with the burials. Thus Cooper quite properly describes the two groups of artifacts separately. The items accompanying the burials were of par-

ticular interest, all being associated with Burial Pit 1. An isolated adult skeleton in this feature had a series of retouched stone flakes and a beaver incisor mounted in an antler handle. A group of bundle burials on the west side of the pit yielded a cluster of bird bones, four unidentified mammal leg bones and fragments of clam shell—all these bearing stains and being partially preserved by some nearly completely disintegrated copper objects, the total assemblage suggesting a group that had been placed in a decorated container. Nearby were a crude chipped stone knife and two triangular projectile points. The burial of two adults at the northwest end of the pit also had a small triangular point in association, an elbow pipe of pottery, and two abraders. Perishable materials were also preserved here through contact with partially disintegrated copper specimens, the copper specimens including a small disc and a conical bangle. In contact with them were patches of a vermillion-colored substance, a fragment of animal hide, a segment of quill, a small piece of twined cedar fiber fabric, two worked fragments of turtle shell, parts of four beaver incisors, two bones of a catfish, two bird bones and decayed pieces of clam shell. The surprising objects associated with this burial, however, were two unusual objects of white manufacture: a lead button and a small steel spring. The lead button was five-eighths of an inch in diameter and somewhat conical in form, having a thickness of one-quarter of an inch at the apex. A perforation three thirty-seconds of an inch in diameter passed through the center of the object. A steel spring was seven-sixteenths of an inch in diameter. While these are perhaps not the kinds of objects we should anticipate being present as trade goods, their implication in terms of a late time placement for the construction of the mound is clear.

We may now turn to the objects recovered in sifting the mound fill. Chipped stone implements include eight projectile points, three scrapers, one knife and one drill. A grooved sandstone abrader and numerous flakes and bone refuse were also present. The projectile points are equally divided between two groups that are designated "corner notched with convex blade and base edges" and "side notched with convex

blade edges," and regarded as comprising two distinct types. This reviewer feels that the use of the term "notched" in connection with these stemmed forms might be more appropriately supplanted by some phrase such as "corner removed" in considering the techniques used in their manufacture. Side notched points such as Madison Side Notched and Raddatz Side Notched are characterized by a U-shaped notch, the depth of the notch generally at least equalling its width and this would seem to be a more appropriate use of the term notch. Judging from the illustrations, the type Durst Stemmed and perhaps Monona Stemmed may be represented at the Rice Lake site. Although 817 sherds were recovered from the fill, only 29 were rim sherds and 30 were from decorated parts of the neck and shoulder of vessels. Thus the amount of typological classification that can be accomplished, as is commonly the case in Woodland sites, is limited. Types that are represented include the broadly distrubuted Madison Cord Impressed and a form which the author cogently argues is similar or identical to the Blackduck pottery of the Headwaters Lake Aspect, Blackduck Focus of Minnesota. This analysis supports a general statement made by Professor Cooper early in the study that much of the material from this sector of Wisconsin corresponds closely to materials whose distributions continues on into Minnesota. It is an important contribution to see these links with our neighboring state beginning to be documented.

In his analysis of the mound remains, Professor Cooper concentrates upon demonstrating the similarity of the traits in the mound he excavated to the traits (as reported by Cyrus Thomas) of the Rice Lake group as a whole. Thus in the shape of the mound, in the initial core of distinctively colored fill, and in bundle burials placed in pits, sufficient evidence is seen to regard the group as having had a common cultural origin. The inference would seem to be warranted yet at the same time it might be equally important to stress the differences. Thomas did not report grave goods in association with any of his mounds yet here we are faced with a very considerable abundance of materials, even aside from the striking presence of objects of European manufacture. And while we need to exercise caution in relation to the interpret-

ation of the midden material incorporated in the mound fill, it is doubtless of some importance that the projectile points associated with the burials are small triangular points whereas those in the mound fill are stemmed forms. Surely some of this midden material is contemporary with the general mound building at the site and we are justified in exploring the possibility that a rather considerable time span may be involved.

The descriptions of specimens are clear and precise and the report is illustrated with photographs (and they are surprisingly clear for a publication produced by a photo-offset process) and diagrams. One suggestion as to a modification in descriptive procedure might be made. Measurements of specimens are given in inches and fractions of inches rather than in the metric system. Although the metric system is no more precise and it involves a mental effort for us to convert to millimeters and centimeters, it is more convenient if we wish to present average dimensions or make other statistical calculations.

Professor Cooper's careful and meticulous description of his excavation of a Rice Lake mound and the provocative analysis of its contents illuminates one of the darker corners in our state's history. Despite its limited scope we have much information here to digest that should be fruitful of further hypotheses. The specific kinds of objects of European manufacture associated with aboriginal items such as the chipped stone projectile points seem incongruous to this reviewer. But our present knowledge of the changing patterns of culture resulting from European contact, as seen though archaeological evidence, are so scanty that we are not yet in a position to generalize or even evaluate the situation. Professor Cooper, with aid from the National Science Foundation, is presently extending his archaeological investigations in northern Wisconsin. We look forward to seeing more of the results of his work.

David A. Baerreis,

University of Wisconsin

Maya: The Riddle and Rediscovery of a Lost Civilization by CHARLES GALLENKAMP; Pyramid Publications, Inc., New York, 1962; 192 pages, 28 text figures, and 11 plates. $ .75 cents. (Originally published by David McKay Co., Inc., New York, 1959; 240 pages, 46 figures. $5.50.)

In the year 1517 a Spanish sailing vessel commanded by Hernandez de Cordoba landed on the coast of Yucatan and made the first Old World contact with a remarkable civilization, that of the Maya Indians. Ever since, European and American scientists, explorers, and adventurers have been working to piece together their fascinating history. How this was accomplished and by whom is the story told in thirteen chapters by author Gallenkamp. It is a vividly written account but concerns itself primarily with the explorers, such as Stevens, Catherwood, Holmes, Prescott, Charnay, Edward Thompson, Maudslay, etc., and events leading to the rediscovery of the Maya civilization rather than with the cultural history or archaeology of the Mayas themselves. It is regrettable that Gallenkamp does not include in his discussion the southern Maya Indians who lived and still live in the Highlands of Guatemala and Chiapas, Mexico. Although the book is of limited usefulness to the serious student of archaeology, to the layman it is interesting and entertaining reading. For this reason the new and inexpensive paperback edition of the orignal hard-cover publication is most welcome.

Stephan F. de Borhegyi
Milwaukee Public Museum

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The Ancient Sun Kingdoms of the Americas by VICTOR W. VON HAGEN; The World Publishing Company, Cleveland and New York, 1961; 618 pages, 164 figures, 54 plates, 3 color plates. $12.50.

This handsome volume, superbly illustrated by artist-archaeologist Alberto Betran, is a one volume, hard cover edition of Von Hagen's three previously published **Mentor** paperback books (Ancient Civilization Series) on the Incas of South America (1957); the Aztecs of Mexico (1958); and the Lowland Maya of the Central American Rainforest and Yu-

catan (1960); the so-called "Sun kingdoms of the Americas."

In a readable and vivid style the author gives the geoaphical background of each civilization and describes its social structure, settlement pattern, architecture, religion, and artistic and scientific achievements over a period of 3500 years (from about 2,000 B. C. to 1,550 A. D.).

The book contains many of the author's personal theories and a good amount of valuable archaeological and historical information. Although the book is of limited usefulness to the specialist, it offers the layman and the beginning student an interesting and enjoyable introduction to Central and South American archaeology. Both the author and the publisher should be commended for presenting the three paperbacks in one volume, and for the many additional references, maps, illustrations and charts.

Stephan F. de Borhegyi
Milwaukee Public Museum

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Aztecs of Mexico: Origin, Rise and Fall of the Aztec Nation by GEORGE C. VAILLANT; revised by SUZANNAH B. VAILLANT; Doubleday and Company, New York. $7.50.

George C. Vaillant was one of our foremost Mexicanists, and his classic general study of the Aztecs and their predecessors, first published in 1941, became widely read in the **Penquin** pocket edition, first printed in 1950. The first third of **Aztecs of Mexico** summarized the archeological history of Central Mexico, but the real appeal and creative contribution of the book was the larger section dealing with the life and times of the Aztec people.

In the twenty years since **Aztecs of Mexico** first appeared, intensive digging in Mexico has greatly altered interpretations of pre-Cortesian history. For some time it has been generally lamented by scholars that the first part of this important book has been unusable by students, with major revisions. The task of up-dating this part of the text in the light of recent knowledge has now been ably accomplished for her deceased husband by Suzannah B. Vaillant. Her purpose was to correct only where needed, tampering as little as possible

with the original style or organization. Chapters VII through XVI, dealing with the Aztec way of life, remain as originally written.

Much of the confusion of the first chapters in the 1941 edition resulted from the then current belief that the historic Toltecs were to be identified with the large archeological site near San Juan Teotihuacan rather than Tula, as more recent evidence has shown. The revised edition therefore divides the original chapter on the "Toltecs" into two separate chapters, one on Teotihuacan, and one on Tula. The completely revised time chart for prehistoric Mexican cultures is now in line with current thinking and recent Carbon 14 dates. George Vaillant's "Middle Cultures," perceptive as this phrase was, now becomes "Pre-Classic," a label which is now more generally used (subdivided into "Early," "Transitional," and "Late" phases). George Vaillant's pioneering field work which identified and ordered the Pre-Classic cultures of the Valley of Mexico needs little revision, but the additional discovery of Tlatilco in the Valley and the subsequent importance attached to the Pre-Classic ("Transitional" phase) "Olmec" influences in Mexico have been given deserved attention in the revised edition. In all, the first six chapters now present a clear picture of the development of prehistoric Indian cultures in Central Mexico, with the first chapter providing a general introduction to Mesoamerican archeology.

Readers of the current edition will be pleased with the addition of about forty new photographs to the already liberally illustrated earlier editions. Some of these are either better quality or more up-to-date substitutions for the same subjects in the earlier editions. The many useful synoptic tables have been combined (in one case eliminated) to organize the material according to current practice; and the student will find that the revised footnotes and the extended bibliography add greatly to the value of the text.

It should be noted that the purpose of both versions of **Aztecs of Mexico** is to use the history of Central Mexico as a "model" for the development of civilizations in Mesoamerica,

rather than representing comprehensive treatment of all regions of this large, interrelated area. While some readers may regret lack of broader coverage and the incorporation of the results of recent field work through all of Mesoamerica, the intent of this book is nevertheless competently realized. **Aztecs of Mexico** should again become a standard text for Mexican archeology — a position the book never lost as far as portraying the remarkable civilization of the people Cortez subdued in the 16th Century.

Lee A. Parsons,

Milwaukee Public Museum

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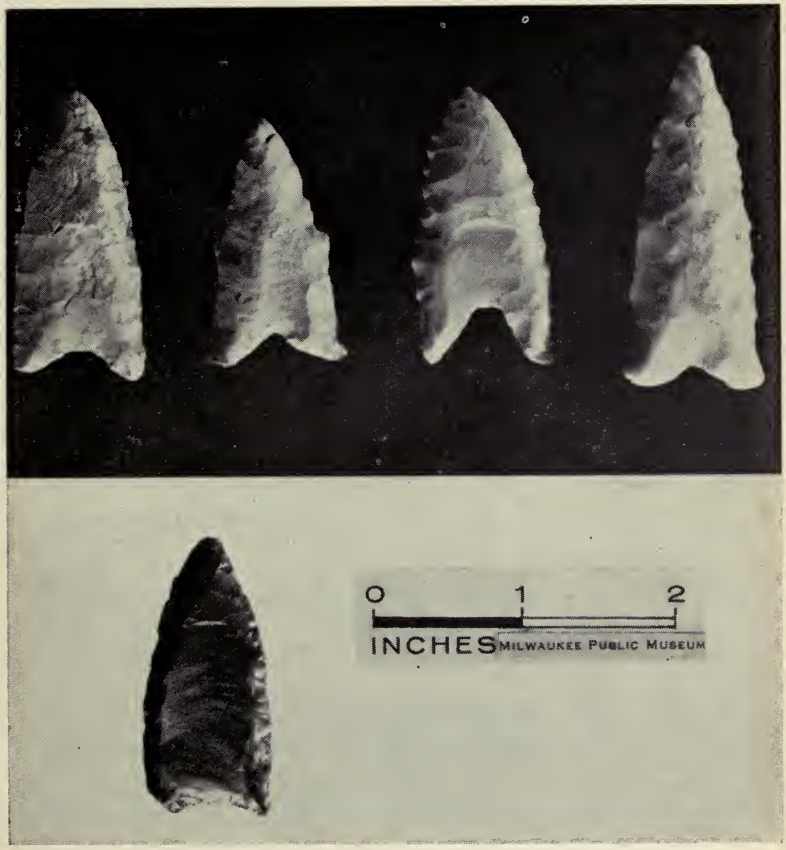

FLUTED POINTS from Wisconsin. Theodore Kouba collection. Upper four from Dane County. Lower one from Grant County.

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